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Revival of Indian Railways

IN our Overseas columns this week will be found the gratifying report confirmed by the latest messages from India, that the railways there are emulating those at home in increased earnings. That the first five months of the Indian financial year, beginning on April 1 last, should have produced an increase of over a million and a half sterling higher receipts than did those months in 1933-34, and well over two millions more than in the corresponding period in 1932-33, leads to the expectation that the full current year's working will bring in something like 3½ and 5 millions respectively more than was earned in those years. It is also satisfactory that the Government of India is losing no time in taking advantage of the improved conditions and sanctioning a revival of construction and of survey for new lines, modest, perhaps, in its extent at present, but nevertheless a welcome beginning. That new railways can now be built in two of the areas referred to in the list on page 501, more cheaply than roads is significant. Their maintenance should be cheaper too, unless a very expensive type of road were to be built. This return to more prosperous conditions in the Indian railway world should soon be reflected in increased demand for modern equipment.

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Modern Comfort in Old Carriages

An excellent example of a really comprehensive programme of passenger service improvement is provided by the Illinois Central system in the U.S.A. It consists mainly of (1) the re-instatement of the Panama Limited—an express of world repute discontinued due to the financial crisis in 1932—but with entirely modern equipment and a faster schedule; (2) the construction of a high-speed streamlined train for the Chicago-St. Louis service; (3) increased use of air conditioning; and, last but not least, (4) the complete rebuilding and refurnishing of the existing coaching stock. The new Panama Limited will begin running on December 1 and will embody the very latest developments in design, decoration and comfort. Both it and the new streamlined train will be completely air conditioned, *i.e.* properly humidified, cooled or heated, and rendered free from dirt. Pre-cooling of the non-air conditioned stock is also Illinois Central practice. The coaching stock, for all important trains in the first instance, is being entirely rebuilt. Individual seats of specially comfortable design will be available for the ordinary passenger, also easy chairs and sofas, reading lamps, writing desks, libraries in the air conditioned lounge cars. Decoration in each case is designed to blend the colours of floor coverings, upholstery and fittings, and separate smoking lounges are provided in coaches and chair cars for men and women. In this way old stock is being brought up to date with all the comforts of modern travel, a policy which might with advantage be adopted in many other countries. Thirty to sixty minutes are being cut from the inter-city schedules of the principal Illinois Central expresses to complete the programme of this enterprising system.

* * * *

The Week's Traffics

The increases shown by the four group companies in their traffics for the past week are in their totals very satisfactory and compare with substantial advances recorded for the corresponding week of 1933. In general merchandise the earnings compare with large takes a year ago, including increases of £38,000 by the L.N.E.R. and of £20,000 by the Great Western. For the 38 weeks of 1934 the total traffics of the four group companies amount to £109,324,000, an increase of £4,610,000 or 4·42 per cent. Passenger train receipts total £49,989,000, an increase of £642,000 or 1·30 per cent. General merchandise earnings aggregate £37,451,000, an increase of £2,685,500 or 7·72 per cent., and in coal class traffics the total is £21,884,000, an increase of £1,282,500 or 6·22 per cent.

	38th Week				Inc. or dec. Year to date	
	Pass. &c.	Goods, &c.	Coal, &c.	Total.		
	£	£	£	£	£	%
L.M.S.R. ..	+ 10,000	+19,000	+ 12,000	+ 41,000	+ 1,936 000	+ 4·61
L.N.E.R. ..	+ 13,000	—	+ 21,000	+ 34,000	+ 1,821,000	+ 6·01
G.W.R. ..	+ 5,000	— 1,000	+ 10,000	+ 14,000	+ 521,000	+ 2·92
S.R.	+ 9,000	+ 2,000	+ 4,000	+ 15,000	+ 338,000	+ 2·31

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Retirement of Mr. F. A. Brant

With the retirement at the end of the present month of Mr. F. A. Brant, Continental Traffic Assistant to the Traffic Manager, Southern Railway, there will pass from active railway life a well-known and popular international figure. Mr. Brant has been closely connected with Continental traffic arrangements since his appointment to a post in the Continental Traffic Manager's office of the former London Chatham & Dover Railway in 1897. His intimate acquaintance with and fluency in foreign languages was of great service to his country during the war. He has also for many years taken a part in the European Timetable Conference and other international conferences, and, through his knowledge of the subject and friendly reception by foreign railways, has been able to secure many advantageous points for his company. Mr. Brant was a member of the Arrangements Committee of the Tenth International Railway Congress held in London in

1925, which performed its work so satisfactorily. When the Southern Railway was formed in 1923 much of the work of consolidating the London-Paris services formerly run separately by the South Eastern & Chatham, Brighton, and London & South Western administrations fell to Mr. Brant, the result being to reduce the number of services which were in operation before the war from nine to seven and to spread them more evenly so as to give greater facilities to the public.

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Captain Beames

Another well-known railway officer is retiring from service at the end of this month, Captain H. P. M. Beames, M.Inst.C.E., M.I.Mech.E., M.I.Loco.E., Deputy Chief Mechanical Engineer of the London Midland & Scottish Railway. But for interludes when he served in the Carlisle District and in the South African and great wars, he spent the 36 years of his railway career from 1895 to 1931 at Crewe. During that time he rose from premium apprentice to Chief Mechanical Engineer of the old London & North Western Railway, and latterly held the offices of Western Divisional Engineer and Mechanical Engineer, Crewe, as a result of the amalgamations. Though his headquarters have been at Euston for the past three years, during which he has been Deputy Chief Mechanical Engineer, L.M.S.R., he has still kept in very close touch with Crewe, the scene of his *magnum opus* the reorganisation of the great locomotive works there. It was then that he turned a jumble of shops housing a heterogeneous collection of machinery into one of the finest and most efficient works in the world, capable of repairing a main line locomotive in 47½ hours as compared with three months prior to reorganisation. Our associated contemporary, *The Railway Engineer* in 1929 described this reorganisation in a series of articles, subsequently published in book form.

* * * *

Nizam's State Railway

The report of the working of the Nizam's State Railway for the year ended March 31, 1934, shows that the gross earnings of the system increased from Rs. 203·25 lakhs in 1932-33 to Rs. 208·74, the increase being entirely under goods earnings. The working expenses were Rs. 120·12 lakhs, as compared with Rs. 114·76 lakhs in the previous year. The net earnings amounted to Rs. 88·61 lakhs and record a small advance over last year's figure. After deducting Rs. 5·05 lakhs payable to the Government of India on account of net earnings of the Bezwada Extension and the Dhronachellam-Kurnoil Railways, the net amount accruing to the Nizam's Government was Rs. 83·56 lakhs, being Rs. 23·44 lakhs short of the minimum fixed for payment to the State exchequer from railway revenues. The net earnings represented a return of 5·90 per cent. on the capital at charge as compared with 5·97 per cent. in the previous year. No new construction was undertaken during the year 1933-34, though a survey for a metre gauge branch line, 63 miles long, from Nizamabad to Jagtial was started in October, 1933, and the field work completed in December. The alignment between Bolda and Adilabad, previously surveyed as a broad gauge line, was re-surveyed as a metre gauge project. The preparation of the estimates for both gauges is in hand. A survey was also made of various roads in the State with a view to examining the possibilities of development of the railway's road motor transport services in the Dominions, which have now been in operation for a full financial year. The working results of the road service section show a return of 10 per cent. on the capital.

Austrian Federal Railways in 1933

A further drop in the receipts of the Austrian Federal Railways was recorded in 1933, but only to the extent of 5·6 per cent. compared with the preceding year. The expenses were reduced by 6·5 per cent., and as a result the operating ratio fell from 108 to 106. The actual figures for 1933 were, receipts S.439,200,000; working expenditure S.465,000,000; working deficit S.25,800,000; accumulated total deficit after meeting all charges, S.103,100,000. Passenger receipts declined by 10·3 per cent. to S.151,900,000, and goods receipts by 0·4 per cent. to S.265,700,000, the former accounting for 36 per cent. of the total revenue and the latter for 64 per cent. The number of passengers carried fell by 17 per cent. to 60,000,000, or no fewer than 33 per cent. less than the number carried two years ago, but the average journey rose slightly from 35·9 km. to 38·1 km. Goods tonnage dropped by 3·6 per cent. to 18,500,000 tonnes, but the tonne-km. rose by 1·3 per cent. to 2,584 million, giving an average haul of 139·5 km. The total number of employees fell from 62,000 to 60,000, but retrenchment is still going on, and it is anticipated that by the end of the present year the number will have dropped to 57,000; the salaries and pensions bill fell from S.365,500,000 in 1932 to S344,000,000 in 1933. Depressed trade conditions led to the suspension of electrification, except for the north bank of the Tauern section, which was opened in December, but road competition was met by the introduction of a number of diesel railcars and light goods locomotives, as well as by railway-owned bus services.

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African Accelerations

Considerable accelerations have been effected in the long-distance services of the South African Railways during the past summer. The chief improvement has been the institution of an express service between Capetown and Port Elizabeth via Mossel Bay, connecting with the arrivals and sailings of the English mail steamers. Over this distance of 673 miles the time has been brought down by 9 hr. 35 min. northbound and 9 hr. southbound, the southbound train being now booked through in 28 hr. 55 min. The Saturday afternoon train from Johannesburg to the Cape, accelerated by 75 min., now completes the journey within 55 min. of the running time of the Union Limited, and various other cuts in time ranging from 1 to 3 hr. have been made. That this is the settled policy of the S.A.R. administration for the future is indicated by the fact that alterations are being made to locomotives with a view to running at higher speeds. No. 2839, of the " CA " class of 4-8-2 locomotives, has recently emerged from Salt River shops rebuilt with driving wheels of 5 ft. diameter, in place of 4 ft. 9 in., with working pressure increased from 200 to 210 lb. per sq. in., and other modifications. At present the Union Limited averages 33·6 m.p.h., including stops, from Johannesburg to Capetown, and is the fastest train in South Africa.

* * * *

Speed Limits

It is common knowledge that Great Britain stands alone in permitting unlimited maximum speeds over her main lines, except at those points where speed is specifically restricted by reason of curves. On the New York Central Lines the express locomotives are fitted with governors which automatically make a partial brake application if the speed rises above 70 m.p.h. In France and elsewhere self-recording speed indicators on the locomotives check the driver's observance of the limit, which hitherto has

been maintained, on the high-speed main lines, at 120 km. (74½ m.) p.h. This French limit is imposed by statute, and for long past the French railways have been endeavouring to obtain some relaxation of the figure. This is now being conceded in the case of railcars with their low centre of gravity; the Bugatti cars on the Paris-Deauville run of the Etat are permitted to travel at 130 km. (81 m.) p.h., though still limited to 120 km. when travelling to and from Havre; the similar vehicles on the Paris-Vichy-Clermont Ferrand route of the P.L.M. are allowed up to 140 km. (87 m.) p.h.; and when the Paris-Lyons Bugatti of the P.L.M. is put into service, it is to be limited only to 150 km. (93 m.) p.h. The raising of the general French limit for ordinary steam trains to 130 km. (81 m.) p.h., would be a valuable and is not an improbable concession on many routes, such as for example, the long sweeping 1 in 200 gradients of the Nord Company. Apart from further acceleration, the higher maximum would permit of more economical locomotive running, as less strenuous uphill work would be needed to maintain existing times.

* * * *

A Motor Trolley Accident

Among the assistant inspecting officers' reports included with those of the inspecting officers on the train accidents for the three months ended December 31 last, is one by Mr. J. L. M. Moore on a very unusual incident that occurred on December 5 between Greatham and Seaton Carew on the L.N.E.R. Some twenty-two men had been engaged in relaying and made their return journey to West Hartlepool on three motor trolleys and a trailer, coupled together; the trailer was the third vehicle, and only the first and last had a driver. On the journey the nut on the bolt of the iron bar that coupled the first and second trolleys worked off, so that the bolt fell out and the vehicles separated. None of the men noticed this until the driver of the leading motor discovered that he had no train behind him. He stopped, and seeing nothing of the other vehicles, went back, with the result that a collision followed in which two men were hurt. After explaining what has been done to improve the coupling arrangements, Mr. Moore says that these trains have already reached a length of four vehicles and are permitted to travel at a rate of 25 m.p.h., he is of opinion that further safeguards are necessary and recommends: (*a*) That some automatic device be provided whereby the driver will immediately become aware of a breakaway; (*b*) that this, or some other device, be made available for the men in the rear of the train to draw the attention of the driver in case of emergency, as he is informed that the noise in the covered trolleys makes any form of audible signal of little value; (*c*) that the drivers be given special instructions how to act in the event of a breakaway; (*d*) that the man in charge of each trolley be equipped with a lighted hand-lamp during the hours of darkness; (*e*) that a more substantial form of buffing and drawgear be devised.

* * * *

Modern Bridging Practice in the U.S.A.

Several novel details of design and construction were noticed by a correspondent who recently visited the two great bridges now being built at San Francisco, and described briefly on page 934 of our issue of May 25 last. Among them are those of the bed plates for the suspension spans of the four-mile San Francisco-Oakland trans-bay bridge. The bed plates are of planed steel, 4 in. thick, and are placed on the pier caps, the upper concrete surfaces of which are ground flat to within $\frac{1}{16}$ in. The plates are laid in rectangular slabs, butt welded together, to form a continuous plate under each tower leg. The welding is being very carefully done with covered electrodes at least $\frac{1}{4}$ in. in diameter. Our correspondent mentions that it is now usual American practice not to paint contact surfaces in built-up girderwork, as to do so militates against tight riveting due to the paint burning round the holes. It is also said to cause trouble to the riveters on account of lead poisoning. All steelwork, after fabrication, is allowed to lie in the yard and rust for at least three and, if possible, up to 12 months, when the mill scale, which has been loosened by the rusting, can usually be sand blasted off before painting. At San Franciso the blasting is done with heat-treated hard steel particles. A hard bright surface is thus obtained as a foundation for the paint work.

* * * *

Railway Shop Equipment

Interest is already being evoked by the Machine Tool and Engineering Exhibition which opens at Olympia in about six weeks' time. Railway mechanical engineers are among those most deeply concerned with the operation of such appliances, it being acknowledged that improvements in the machines used in the construction and repair of locomotives and railway stock have played a highly important part in the development of the larger and heavier units now required in railway service. There are many problems to be faced in railway shops of a kind peculiar to the work, and arising from the high standards of safety insisted upon. Builders of machine tools and other shop appliances have maintained a steady advance and many of the machines nowadays found in railway works are planned to meet exacting individual requirements, making possible greater economy in time and labour and expediting output to a remarkable degree. Not a few of these advances are the outcome of co-operation between user and manufacturer, mutual examination of the requirements having produced the most satisfactory equipment.

* * * *

How Locomotives Differ

It might be assumed that locomotives built in accordance with identical specifications and drawings, by the same men and in one set of shops, would exhibit the same capabilities in service. The maintenance, fuel and other costs should approximate very closely to a single basic line of figures, and what might reasonably be expected of one engine should set the standard for the series. In practice, wide differences are sometimes to be found between engines belonging to a given class and emanating from a common source. The most careful shop methods and inspection of work would appear at times insufficient to ensure uniformity in the manufacture and assembly of the component parts. One engine may be a better steamer than another, or show greater freedom in running, and other dissimilarities come to light in course of time. This is more easily understood when it proceeds from portions of the construction in which adjustments are necessary, as for instance in the fitting together of moving parts. In some cases faulty alignment is the cause of unsatisfactory running, and this may show itself in more ways than one, though usually by the engine exhibiting signs of stiffness and undue wear at certain points. At the present time, greater precision and more careful gauging of component parts have eliminated some of the faults hitherto existing, but even so in a given number of identical engines it is usually found that one or two fall below the standard of the class as a whole.

New Zealand Government Railways

IN their operations for the year ended March 31, 1934, the New Zealand Government Railways are able to show for the first time since 1929, an increase in gross revenue in comparison with the previous year. The report now published is the third to be issued by the Railways Board since its formation. Gross earnings, which included receipts from subsidiary operations such as the Lake Wakatipu steamers, the road motor, refreshment, bookstall and advertising services, and from miscellaneous sources, amounted to £6,332,711, an increase of £298,308, or 4·94 per cent. compared with the previous year. In the gross expenditure of £5,247,153 there was an increase of £63,294 or 1·22 per cent., leaving a net revenue of £1,085,558, an improvement of £235,014 on the previous year, and representing a return of 2·05 per cent. on capital, as compared with 1·65 per cent. for 1932-33. Interest charges, however, increased by £51,710 to £2,282,365. This increase was principally due to the taking over from the Public Works Department of the Tahora-Okahukura section of the Stratford-Main Trunk Railway, the capital cost of which was £2,311,821. The excess of interest charges over net revenue amounted to £1,196,807, or £183,304 less than for the previous year. During the year under review the sum of £229,203 was charged against revenue for renewals and the sum of £482,735 on account of depreciation. Subsidiary services and miscellaneous brought in a net revenue of £333,869, against £345,223 for 1932-33, a slight gain in revenue being offset by an increase in expenditure. Figures in the accompanying table refer to railway operations only:—

	1933–34	1932–33
Miles open	3,320	3,315
Train miles	10,163,474	9,828,853
Passenger journeys	19,047,186	18,366,654
Goods tonnage	5,093,396	4,945,592
Average haul, goods and live-stock	68 miles	66 miles
Average revenue per ton, goods and livestock	14s. 2d.	14s.
Operating ratio, per cent. ..	86·65	90·54
	£	£
Capital cost of open lines ..	53,909,347	51,480,949
Operating earnings	5,628,835	5,339,075
Operating expenses	4,877,146	4,833,754
Net earnings	751,689	505,321

Earnings from passenger train traffic for the year increased by 10·69 per cent. Standard-fare revenue, which represents about 80 per cent. of the ordinary passenger traffic, showed a continual decline from 1926 to 1933, but in the year under review it returned to just below the 1931-32 level, principally as the result of two Easter holiday periods having fallen in 1933-34. Of the increase of £93,346, or 11·25 per cent., in the year under review, approximately £55,000 is attributable to the Easter holidays, leaving £38,346 (or 4·6 per cent.) as the increase due to additional traffic. Suburban journeys showed an increase of approximately 8 per cent. over 1932-33 and over 1930-31, but revenue, while 4·4 per cent. better than last year, was 9·2 per cent. below 1930-31. This is due to fare concessions granted in the year 1931-32. During the last two years revenue from this traffic has shown a slight improvement, and the number of journeys in 1933-34 was the highest since the pre-depression year 1929-30. In goods and livestock traffic an increase in tonnage of 2·76 per cent., coupled with an increase of 1·13 per cent. in the average receipt per ton (the latter due to the increase in the average haul), resulted in an increase in revenue of 4·42 per cent.

The report deals very fully with the question of competition with road vehicles and also with coastwise shipping.

The board's road motor services for the year under review resulted in a profit of £2,368, compared with £521 for the previous year. Many improvements and conversions of rolling stock were carried out during the year, including the equipment of seven carriages with S.K.F. roller bearings, making a total of 59 cars equipped with these bearings to date. The installation of these bearings, the first of which were placed in service in 1931, is reported to have amply justified the policy of their introduction.

Improvements in train services are being steadily pursued, notably in the provision of express goods services on the main trunk lines in both the North and South Islands. Results of the Railway Publicity Branch have been satisfactory. In the matter of the display of travel posters the Department has reciprocal agreements with many other railway administrations, including the London & North Eastern Railway. With a view to reducing maintenance costs, a trial length of a mile of the Lower Hutt suburban line has been laid with Thermit welded joints. During the year a commencement was made with the work of electrifying the line between Wellington and Paekakariki, and a contract was let for the construction of the new station building at Wellington at a cost of £339,173. The work of strengthening and renewing bridges was continued.

* * * *

A New Locomotive Testing Plant

NOTWITHSTANDING the remarkable advances of recent years, the steam locomotive has by no means reached the limits of its development. It has, however, attained such a degree of power and efficiency that there is little scope for further progress by empirical methods or on the basis of such data as can be obtained by road tests using a dynamometer car. For trials under service conditions, the latest dynamometer cars provide autographic records of remarkable interest and value, but a stationary testing plant is required to permit the accuracy and detail of measurement, observation and analysis necessary for precise determinations of performance and further improvements in design. During a road trial there are inevitably variations in speed, cut-off and boiler pressure; in other words, the power developed varies continually, and there is more or less uncertainty as to the output to which the coal and steam consumption should be referred. The total consumption of steam can be determined fairly easily, but in arriving at the coal consumption there is more or less error due to differences between the weights and stages of combustion of coal in the firebox at the beginning and end of the trial. For definite and accurate results, the trial should last for at least two hours at constant speed and power, and these conditions cannot be fulfilled completely except on a test bench.

Various attempts have been made during the past half-century to conduct road trials at constant speed with constant throttle and cut-off, speed variations due to profile being eliminated by a compensating variation in the tractive resistance of the train. Thus, in 1923, Czeczott, Chief of the Research Department of the Polish Ministry of Communications, regulated the speed by adjusting the resistance of a back-pressure locomotive in the test train. This method, as developed by Professors Nordmann and Gunther of the German State Railway, using air back-pressure instead of steam in one, two or three regulating locomotives as required, is the method hitherto used by most of the French railways. It does not, however, eliminate the effects of variations in atmospheric conditions, and the test train is always liable to be held up by

signals. The method is inconvenient and expensive, and the range of error is of the order of 10 per cent., thus excluding the possibility of obtaining reliable information concerning improvements in locomotive construction or equipment expected to effect only 5 per cent. increase in efficiency. There has thus been a strong incentive to develop stationary equipment for testing locomotive performance, and a number of test benches have been built since the installation of one for instructional purposes at Purdue University, Indiana, in 1891. The most important of these is probably the Altoona test bench exhibited by the Pennsylvania Railroad Company at the St. Louis Exhibition in 1904 and then removed to the Altoona shops. A test bench with brakes capable of absorbing up to about 500 b.h.p. was erected at Swindon in 1905, but this is obviously inadequate for systematic researches on modern high-power locomotives. In 1930, the German State Railway built a test bench at the Grünewald research station.

Whatever may be the future of the Grünewald plant, the main difficulty of the earlier plants was that of keeping the speed of the locomotive reasonably constant without either hunting or racing. For instance, according to Prof. Lomonossoff, speeds on the Altoona test bench vary within a range of ± 17 per cent. Nevertheless, Monsieur Pierre Place, the designer of the new testing station at Vitry near Paris, described in this issue, felt confident that the technical advances of recent years would enable satisfactory results to be obtained, justifying the heavy expenditure required by a bench capable of testing locomotives more powerful than any yet built. An accuracy of construction remarkable in such heavy equipment has been attained, and the success achieved in the all-important stability of operation may be judged from the fact that the speed is automatically held constant within ±1 to 2 per cent. at any desired value and at any load within the range of the locomotive tested.

The Vitry test bench is unique in power and accuracy and, so far as we are aware, it is the only one in Europe in regular use. It is designed specially to meet the needs of the future, and there can be no doubt as to its value in expediting research, and in enabling trials to be conducted more accurately and more economically than on the track. Any standard gauge machines can be tested, whether steam or diesel locomotives or rail motor cars, and electric locomotives can be tested as soon as a supply of electrical energy has been arranged. Many important investigations can be made on the test bench which are quite impossible by any other means. Problems of braking, acceleration and air resistance cannot be examined, but the movements of the motion work, the bending and vibration of parts, the action of poppet valves, the dryness-fraction of the steam, and many other matters can be studied on the test bench, but not during road trials. It must, of course, be borne in mind that the performance of the boiler may be appreciably altered by the virtual elimination of vibration on the test bench; and that the absence of wind cooling of the cylinders and boilers is another distinction between bench and track trials. These considerations, however, do not reduce the value of test-bench trials *per se* and, as a corollary to the exactitude of measurement possible on the test bench, the results are capable of reproduction. This, and the ability to alter variable factors singly and at will, make possible truly scientific investigations. After the inauguration of the Vitry testing station on July 27, 1933, a considerable amount of adjustment and preliminary testing was required before the plant was in full running order. Since October, 1933, the work accomplished has included tests on a smoke-consuming apparatus, a diesel locomotive, the investigation of motion-work irregularities, and power and efficiency trials on various locomotives. This testing station, erected at the joint expense of the principal railways of France, is impartially at the service of them all, and it is hoped that, as opportunity arises, arrangements may be made to test locomotives for builders and for foreign railways on agreed programmes and in the presence of representatives from the firms and railways concerned. The subject derives special interest at the present moment from Mr. H. N. Gresley's Presidential Address last night to the Institution of Locomotive Engineers.

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The Chinese Eastern Railway

FROM the details given by our Japanese correspondent in the news article on page 520, it appears that another chapter in the chequered history of the Chinese Eastern Railway has now been closed. This railway, which the Government of Manchukuo has now renamed the North Manchurian Railway, had its origin through the construction of the Trans-Siberian Railway during the eighteen nineties. It was obvious that a shorter route between Central Siberia and the Russian port of Vladivostok was provided through Chinese territory than by following the valley of the River Amur. In May, 1896, therefore, a treaty was entered into between Imperial Russia and China for the construction of the Chinese Eastern Railway. The contract was dated September 8, 1896, and the capital provided by the Russo-Chinese (subsequently the Russo-Asiatic) Bank, chiefly by loans raised in France, with the support of the Russian Government, however, which guaranteed the interest. Survey work was begun in the autumn of 1897, but construction on a large scale did not take place until the beginning of 1900. The original idea of the railway was solely as a bridge between the Russian sections of the Trans-Siberian line, but so great were the requirements of Manchuria for railway communication that the builders were compelled to open certain sections as early as 1901. The whole of the 1,600 miles of the Chinese Eastern Railway, which was, of course, built to the Russian 5-ft. gauge, was completed by July 1, 1903, at a total cost estimated at £45,000,000, which then included the line to Dairen and also about £7,000,000 of expenses caused by the Boxer rising.

The terms of the original concession gave the Chinese Government the right to purchase the line 36 years after opening by repaying the capital expended, and on the expiration of 80 years the line would become the property of the Chinese Government without cost. Following the Russian revolution, the Chinese Government took temporary charge of the line, but by agreement of May 31, 1924, between the Soviet Government and China, the Chinese Eastern Railway was placed as from October 3 of that year under joint Russian and Chinese management, although the Soviet authorities continued to claim ownership as successors to the Imperial régime. On May 2, 1933, after the Government of Manchukuo had been set up, under Japanese auspices, and declared its independence of China, the Soviet Government informed Japan of its desire to sell the Chinese Eastern Railway either to Japan or to Manchukuo. The Soviet offer of about £25,000,000 brought forth a counter offer from Manchukuo of £5,000,000, and, after 15 months of negotiations in Tokyo with Japan as the intermediary, the Manchurian delegation broke off official discussions on August 13 last. Since that time, informal conversations have taken place between M. Hirota, the Japanese Foreign Minister, and M. Yurenev, the Soviet Ambassador in Tokyo, with the result that basic agreement appears now to have been reached.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Hot Soup for Hot Weather

London, September 24

To the Editor of The Railway Gazette

Sir,—Your correspondent "Viator" has once again returned to the charge in advocacy of melon and grape-fruit in hot weather in British restaurant cars, yet may we remind him that there are other "Viatores" who prefer hot soup to warm grape-fruit from a tin, or melon. Indeed, many who have lived in hot countries relish curries and other hot dishes. The following menu of an L.N.E.R. train on a hot day in July, 1932, seems to be ideally suited to a variation in tastes amongst travellers.

DINNER 5/-

Cantaloup Melon
or
Consomme Paysanne

Fillet of Sole Mornay

Vol-au-Vent of Sweetbread

Roast Leg of Lamb and Mint Sauce
New Potatoes Peas

Greengage Tart
Chocolate Bavarois

Cheese Salad Biscuits

Dessert

Cup of Tea or Coffee after Luncheon or Dinner 4d. extra.
First Class 16-7-32

DINNER 3/6	DINNER 3/-
Soup	Soup, Fish or Joint
Poultry, Vegetables	Vegetables
Sweets or Cheese	Sweets or Cheese

A supplementary portion of any dish on the 5/- Table d'Hote Menu will be served on request.

Last October, when travelling across Nevada and Utah on the Southern Pacific's Overland Limited on which the restaurant service is justly famed, it was noticed that the special dishes for each meal were invariably hot and invariably relished. Below is a copy of one typical luncheon menu for that train when the temperature outside the car was over 90° and when all seemed to enjoy their hot soup in the hottest of weather.

Price opposite each entrée includes soup, salad, entrée, vegetable, bread and butter, beverage and dessert. If none of the selections listed here appeals to you, the usual a la carte service is available.

SOUP
Beef Broth, Anglaise
Tomato Bouillon, Frappe

ENTREES

1—Filet of Sole, Tartar Sauce	80
2—Poached Eggs, New Spinach, Florentine	90
3—Calf's Liver Saute, Sauce Lyonnaise	90
4—Creamed Minced Chicken, Delmonico	1·00
5—Grilled Spring Lamb Chops	1·10
6—Luncheon Steak, Mushroom Sauce	1·25

VEGETABLES

New Green Peas — Fresh Spinach
or
Buttered Young Beets

POTATOES

Mashed — Boiled — Fried

The Salad Bowl

Corn Bread — Assorted Bread

DESSERTS

Fruit Tartlet, Whipped Cream
Ice Cream with Cake — Fruit Jelly, Chantilly
Iced Tea — Coffee — Milk

Personally we prefer the "potage" to the inevitable cold collation "mayonnaise of salmon," and we enclose our cards but prefer to sign ourselves

"VIATORES"

[As tastes differ, the ideal is to provide alternatives, and in any case, to carry apparatus to keep foods which should be cold, cold.—Ed. *R.G.*]

Travel with a Holiday Season

London, September 20

To the Editor of The Railway Gazette

Sir,—On page 441 of your September 14 issue you reproduce a photograph of a young Scottish travel enthusiast who appears to spend much of his time in extracting maximum mileages out of weekly holiday season tickets. According to the underline, he is seen in the picture "completing 2,339 miles of railway travel," and this completion appears to be taking place on the front of the engine of the Flying Scotsman, where this be-travelled season ticket-holder is shaking hands with what one may assume to be the driver, on the left-hand side, while he is being held securely in position, apparently, by the fireman on the right.

This photograph prompts some pertinent queries to which I hope you may be able to furnish a reply:—(*a*) What happens to the locomotive, presumably still in motion, while the driver and fireman are out at the front end helping the season ticket-holder to complete his record mileage? (*b*) Do ten shilling weekly season tickets in the Edinburgh area permit the holder to travel on the Flying Scotsman, which at the time the photograph was taken was booked non-stop between London and Edinburgh, and (*c*) If the mileage was achieved on the Waverley route between Galashiels and Edinburgh, as stated in your editorial note, what has the Flying Scotsman got to do with the matter, anyway?

VERITAS

[The little molehill of an obviously wrong tense has become a mountain to poor "Veritas." If for "completing" he will please read "having completed," all his misgivings will vanish.—Ed. *R.G.*]

The First Railway "Bed-Carriage"

Bordyke, Burgess Hill,
Sussex, September 25

To the Editor of The Railway Gazette

Sir,—In my letter appearing in The Railway Gazette of September 14, mention was made of a "bed-carriage" on the Grand Junction Railway. It is possible that this vehicle was running from the opening of the G.J.R., which took place on July 4, 1837, and, if this be so, it is earlier than the U.S.A. sleeping car mentioned in your issue of August 24.

In the second edition of Osborne's "Guide to the Grand Junction Railway," published in 1838, there is a chronological account of the progress of the railway. On page 43 is the entry "June 1837. The directors adopted their regulations and fares." On page 60, under "regulations" is "The first class trains consist of coaches carrying 6 inside, and of mails, carrying 4 inside, one compartment of which is convertible into a bed-carriage, if required." If these be the regulations approved by the directors in June, 1837, a bed carriage was apparently available from the opening of the line on July 4, 1837. Perhaps some reader of The Railway Gazette may be able to refer to some definite announcement on this point published prior to Osborne's "Guide" of 1838.

Yours faithfully,

G. A. SEKON

[The bed carriage to which Mr. Sekon refers was a mail coach in which opposite seats might be bridged by a padded board, and a panel opened so that the sleeper's feet could project into the "boot" or luggage compartment of that type of coach. It is therefore not strictly comparable with the separate sleeping car of November, 1837, on the Cumberland Valley Railroad, to which, in our issue of August 24, we gave pioneer honours, subject to the proviso "the evidence is by no means conclusive." Precise information as to the date when the Grand Junction bed carriage was introduced is not known to us. Perhaps some reader with a contemporary timetable might be able to throw light on the matter.—Ed. *R.G.*]

PUBLICATIONS RECEIVED

Port of London, 1909-1934. By Alan Bell. London: The Port of London Authority, Trinity Square, E.C.3. 7¾ in. × 10¼ in. 74 pp. Price 3s. 6d. net.—This is a handsome and well-illustrated brochure issued by the Port of London Authority to mark the completion of a quarter of a century of its life as the responsible body for the whole of the docks and tidal reaches of the River Thames. The author remarks in a foreword that, in a port with a trading history of 2,000 years, 25 years may seem a petty span, yet more has happened to the Thames in that short period than in any hundred years of earlier life. Since the Authority took over control, on the last day of March, 1909, it has "rebuilt the sea-gate of the world," and this work provides the material which Mr. Alan Bell has weaved into a fascinating non-technical story. Some 11 interesting photographs of the docks and of important public functions connected with them are reproduced, in addition to half a dozen charming pencil sketches by Mr. Jackson Burton, and a folding map.

Faraday on Rating, Fourth Edition. By P. M. Faraday and A. S. Comyns-Carr, K.C. 1934. London: The Estates Gazette Limited, 33-35, Kirby Street, E.C.1; and Sweet & Maxwell Limited, 2 & 3, Chancery Lane, W.C.2. 9¾ in. × 7½ in. × 4 in. 1,064 pp. + tables and index. Price £3 3s. Post free.—Since the third edition of this well-known authority on rating was published in 1910, rating legislation of much importance has been passed in the shape of the Rating and Valuation Act, 1925, the Local Government Act, 1929, with its provisions as to derating and railway rebates, and lastly, the Railways (Valuation for Rating) Act, 1930. These have naturally called for a re-statement of rating legislation, though the authors consider that apart from certain decisions of the High Courts and the effect of the Act of 1930, no revolutionary change has been made in the method or principle of valuation for rating. Even in the case of railway valuations they are doubtful whether the new Act has made such far-reaching alterations as are generally supposed. We are of course, most concerned with railway valuation, on which the authors make most stimulating reading. The preface gives some guide to the critical spirit in which the new legislation and some of its anomalies are discussed. The work is divided into three main parts, I, Principles; II, Practice; and III, Procedure. In the appendices the relevant parts of the principal statutes are set out in full, as also the scheme of apportionment of the Railway Assessment Authority, and the report submitted to the Minister of Transport in 1922 by the Committee on the Valuation for Rating of Amalgamated Railways situated partly in England and Wales, and partly in Scotland.

The book thus forms a compact reference library on the rating of railways and their ancillary undertakings. It gives specimen valuations of railway and dock properties, and these are of great assistance in following the explanations of the 1930 Act. So far the amount of case law arising out of the Act has been limited, but the authors discuss in most illuminating fashion a recent decision of great importance by the Court of Session on the valuation of the London Midland & Scottish Railway in Scotland, also giving the decisions of the judges in full. They have also remarks to make, which deserve consideration, on the possible effect which the omission to repeal certain sections of the Valuation (Metropolis) Act, 1869, may have on the valuation of railway properties in London.

Map of the Far East. Edinburgh, 1934: John Bartholomew & Co. Ltd., 12, Duncan Street. 28 in. × 26¾ in. Scale 1 : 6,000,000 (about 95 miles to an inch). Price, mounted on cloth, 6s. net.—Comprehension of events in the Far East is not always easy, due to swift territorial changes and a lack of adequate information for keeping pace with them. There will therefore be an assured demand for this clear and accurate new map, which interprets that elastic term, the "Far East," generously and intelligently by extending northwards to include Lake Baikal and so showing the whole of the newly created territory of Manchukuo with those portions of the U.S.S.R. bordering thereupon. Boundaries are clearly shown in red, of a shade which stands out boldly against the physical colouring of the map and does away with the not infrequent complaint that a wealth of detail as to contours obscures the clarity of political features. Railways, too, are well displayed, and in a form which does not render them liable to be confused with rivers. Completeness in this respect is not easily attainable in the cartography of areas where new construction proceeds as rapidly as is now happening in China, but the detail and accuracy of this map in the matter of the situations of towns and villages and their current names will enable the possessor to follow the course of new schemes as they develop.

Introduction to Engineering. By R. W. J. Pryer. London: Sir Isaac Pitman & Sons Ltd., Parker Street, W.C.2. 7½ in. × 5 in. 117 pp. Price 2s.—Boys who are really suitable for training as engineers begin to show the direction in which their interests lie long before they reach the age when they are permitted to enter technical institutes. While still at an ordinary school they get no nearer to the subject of their choice than school physics, mathematics and chemistry take them, and hitherto there has been too little for their reading between the broadly descriptive books on railways, ships, and other "wonders" of engineering, and the more difficult textbooks to be worked through with a teacher. "Introduction to Engineering" helps to fill the gap, and the boy who reads through this little book with the occasional assistance of a teacher or older friend will be the readier to take an interest in details when his attention is drawn to these in an engineering works or college. The book is also well worth adding to the library of undergraduates studying for the intermediate examination in engineering. Very many of these students have been so absorbed with the work of passing Matriculation as to need telling the most elementary things about engines. There are a few errors which need correcting. In the illustration of automobile wheel mountings on p. 61, (*b*) and (*c*) should be interchanged to agree with the text. On p. 87 the utmost crushing resistance of cast iron is given as 100 lb. per sq. in. instead of 100 tons per sq. in., and on p. 110, the ratio of oxygen to acetylene by volume in the chemical equation is given as 1·5 instead of 2·5. We think that on p. 91, among the applications of manganese steel, there should have appeared a reference to railway points and crossings. Also Figs. 36 and 37, showing alternative ignition systems for petrol engines, would be improved by the delineation of condensers across the primary windings. Experiments made in our own youth showed that the sparks obtainable by induction were very disappointing until condensers were used.

Locomotive Engineers' Pocket Book, 1934. London: The Locomotive Publishing Co. Ltd., 3, Amen Corner, Paternoster Row, E.C.4. 6½ in. × 4 in. × 1 in. 384 pp. Price 3s. 6d. —Each year this little book illustrates how competent to provide an up-to-date summary of facts and figures relating to its own subject is a technical publication continuously in touch with practice. From no outside source could come a work of reference so full of generalised information and dealing authoritatively with such new developments as are here noticed. Any interloping volume would have to be to a very great extent a compilation of second-hand information. In this pocket book sections are devoted to internal combustion and special locomotives, and there is a minimum of such material as can be found in general engineering handbooks. Space which might have been taken up with mathematical tables, properties of sections, &c., has wisely been saved for the more detailed treatment of locomotive matters. Weight distribution on axles and balancing are subjects dealt with very fully, and there is a section devoted to valve gears in which over 30 variations are briefly described. A valuable feature of all sections is the allusion to articles and papers dealing more fully with the matters introduced. This practice could with advantage be extended, as a study of the literature available is a necessary preliminary to all original investigation and a wise beginning even in routine designing.

THE SCRAP HEAP

Fifty Years of Freight Service

When the Great Western Railway celebrates its centenary next year, Mr. C. Bassage, the retiring Principal Assistant to the Chief Goods Manager, will be able to claim that he was in the company's service for half its total life. Starting as a boy of 14 in the Goods Office at Wolverhampton in 1884, he received a salary of fifteen pounds a year, for which he worked from eight o'clock in the morning until such time as it pleased those in authority to let him depart—usually not until six or seven at night.

* * *

In an interview to the press at Paddington station on Wednesday last, he recalled many interesting and amusing incidents in his long railway career, and we therefore devote our Scrap Heap page this week to a selection of these.

* * *

His duties at first made more demands upon his endurance than upon any other quality, for they consisted mainly of addressing envelopes and copying letters for duplication by the primitive and often temperamental jelly system then in vogue. This was before the days of the typewriter, which, like the replacement of the old needle telegraph instrument by the telephone, is an aid to office work which Mr. Bassage has seen introduced and developed in the course of his experience.

* * *

In addition to these humble tasks must be mentioned the responsible commissions undertaken by Mr. Bassage on Monday mornings, when with an unaccustomed weight of money in his pockets, and the cryptic orders of his overlords in his ears, he made his way to those establishments which exist to accommodate the sporting fraternity in its desire to stake its fortunes on the fickle horse.

* * *

On his transfer to Birmingham, Mr. Bassage worked for some time in an office where the senior member was accustomed to maintain a blazing fire and tightly closed windows under all conditions of outside temperature save the almost tropical. His stifled associates pleaded with him in vain, and it was left to Mr. Bassage to take action of a practical kind by placing the handle of the poker in the blaze and then leaving it in a position which invited the fire-worshipper to ply it on his return. In spite of later consequences, his reactions on grasping the hot metal were deemed a victory for the fresh air contingent.

* * *

It was not always by such drastic means that Mr. Bassage imposed his will or advertised his displeasure. Later in his career a special train of bananas arrived in London from Avonmouth with so many tarantula spiders in the crates that the men refused to unload them. Soft words and the promise of hard drinks served at length to overcome a not unnatural prejudice. so that if there were any dancing porters in the neighbourhood of Paddington that night, the blame must be laid to a more homely influence than the tarantula.

* * *

An unusual load which once came under the supervision of Mr. Bassage consisted of five hundred tons of dollars despatched from the Straits Settlements to the mint at Birmingham for an adjustment in size. They were conveyed from Plymouth in twenty-five vans, and after unloading there was only one vehicle in which there appeared any trace of portions of the cargo having escaped from the crates in transit, three coins being found on the floor. Mr. Bassage took them in person to the mint, expecting congratulation on the care with which the Great Western Railway had transported the load, instead of which the truants were snatched from him with almost indecent haste and an intensive check of the contents of the thousands of other boxes that had arrived at once instituted.

* * *

A less troublesome consignment was Barnum and Bailey's circus on its first visit to this country, when it was conveyed between various centres by the G.W.R. The circus staff attended to the loading and unloading the animals itself and provided three private vans for their transport.

* * *

Mr. Bassage saw the first express vacuum brake fitted goods train run on the Great Western Railway. It was introduced in the early eighteen nineties from Oxley sidings (near Birmingham) to London, usually taking thirty wagons. The load on the corresponding service to-day is sixty wagons and seventy-two of these trains are run on the whole system.

* * *

Live poultry was at one time a frequent cargo and it was a regular practice for the men to feel beneath the crates for eggs before unloading.

* * *

The Broccoli traffic from Cornwall formed an important item in daily working last summer, which was a record season, often necessitating the running of eleven special trains in a day with from fifty to fifty-five vans each.

* * *

Mr. Bassage's reminiscences extend as well to passenger developments. An unusual feature of train lighting he recalled was the use by passengers of rubber " suckers " to hold the candles supplied to supplement the exiguous oil lamps in the roof. The device was common chiefly among commercial travellers, who thus stuck their candles against the window panes and were able to attend to their accounts as they travelled.

* * *

The extension of steam heating from passenger to goods vehicles now finds an unusual application in the transport of hot chocolate from Birmingham to Slough, where it is used for coating confectionery.

* * *

In his fifty years of service, Mr. Bassage has seen the goods staff of the Great Western Railway increased to a strength of 12,000. The speed of transport has been accelerated from the point at which a small packet despatched by a route necessitating two or three transferences might take a week to reach its destination, until the company now reckons to deliver 95 per cent. of the traffic handed in on the following day.

OLD RAILWAY RULES

Extracts from old railway rule books sometimes make amusing reading. In 1848, for example, it was the duty of the Great Western Railway superintendents to make themselves well acquainted by frequent personal intercourse with the character and conduct of every man under their orders. The superintendent's multifarious duties required him to see that the vehicles were properly cleaned and the glasses and handles made bright, and that " the buffers pressed against each other so that they receded about an inch." He had also to see that every passenger had a ticket, but where a passenger held a ticket short of his destination his duty included the seeing of the passenger off the station to which he had paid his fare, unless " being a respectable party, he could satisfy the superintendent that he had no intention of paying an improper fare." Smoking on any part of the company's premises or trains was prohibited, and idleness or neglect of duty punishable by a fine. In the case of detention or stoppage of trains, guards were instructed to explain the cause to the passengers and " endeavour to pacify those who may be annoyed."

* * *

THE WRONG LEGS

The breezy poster " Llandudno Calling," which is to be seen on many railway stations, shows in the foreground a herring gull with a pair of yellow legs. Now the legs of our herring gulls (writes a naturalist) are pinkish in colour; it is the lesser black-backed gull that has yellow legs, and it is necessary to go to the South of Europe to find a species of herring gull with legs of that colour. The staff of at least one station on the Cheshire Lines, with a very proper zeal and a commendable love of accuracy, has used chalk to put matters right, and their herring gull is now standing on its own pink legs.—*From the " Manchester Guardian."*

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

Viceroy's railway optimism, new surveys and constructions and rail-road co-operation in India—Spanish Government's attitude to political strikes—Latest developments in U.S.S.R. —Swedish buffet cars—Accelerations and improvements in New South Wales

INDIA

The Viceroy on Railway Finance

In addressing the Central Legislatures at Simla recently, the Viceroy struck a note of optimism when, referring to the financial position of the Indian railways, he said that railway earnings were better by over Rs. 175 lakhs than they were for the same period last year.* He thought that the increased prosperity of the railways was an indication of general revival of trade throughout the country.

Vizagapatam Harbour

His Excellency next touched upon the development of the Vizagapatam harbour, which he formally opened in December last year. With the steady growth of facilities the administration hoped that it would soon be possible to open the harbour to vessels of much larger dimensions than could be accommodated at present. There had already been a substantial increase in the number of vessels calling and in the tonnage of cargo handled at the port. Further facilities might be expected to attract an ever-growing volume of traffic. The harbour supplied a long-felt need for a safe anchorage for ocean-going steamers on the east coast of India between Calcutta and Madras, and should greatly assist in the development of a hinterland, rich in natural resources, by providing for its produce an outlet to the markets of the world.

New Railway in Sind

An interesting debate took place in the Legislative Assembly on the motion of the Financial Commissioner of Railways for the grant of Rs. 15 lakhs for the construction of a new metre gauge railway in Sind to serve the area opened up by the Lloyd Barrage. Mr. Rau explained that the project promised to fetch a return of 6 per cent. on capital outlay. It was expected that the new line would be completed before the next crops were ready. The proposed railway from Pithoro to Jhudo would not only shorten the distance between these two points, which were already connected by rail, but would also provide transport facilities in an area particularly deficient in roads. The opposition to the scheme was mainly based on (1) the duplication in railway service that the new construction would involve and (2) the probable necessity to convert the proposed metre gauge line into broad gauge in the future. It was also urged that the Government should examine other pressing schemes of railway construction in the Barrage area.

The objections were met by Mr. Rau with the assurance that the Jhudo-Pithoro line was really necessary, roads being more expensive than railways in this area. The cost of conversion to broad gauge would not be great as only the widening of the track would be required. Rolling stock was being provided by the Jodhpur Durbar. The demand was granted, and the official sanction of the Railway Board for the construction is as noted in another paragraph below.

A representation has again been made to Mr. Rau pressing the urgency of the Bombay-Sind railway project. It is reported that the divergent views of the Agent of the North Western Railway and the special officer in charge of the survey have led the Railway Board to seek the opinion of the Agent of the B.B. & C.I. Railway. It is urged that the produce of the Lloyd Barrage area cannot find markets in Kathiawar and Gujerat in the absence of a direct railway service.

Railway Amalgamation

Information was sought in the Legislative Assembly on the attitude of the Government of India in the matter of amalgamation and reorganisation of Indian State Railways with particular reference to the recommendations of the Pope Committee on the subject. This committee stressed the possibility of improved efficiency and economies in the operation of railways obtainable through the amalgamation of railways, and adduced as examples the G.I.P. and B.B. & C.I. Railways centred upon Bombay and the E.I. and E.B. Railways on Calcutta. The feasibility of such amalgamation is under consideration by the Government of India, who find it impossible to estimate the saving accruing as a result of amalgamation till they come to a decision as to the railways that can be amalgamated. One of the greatest difficulties in the way of amalgamation is the existence of company-managed railways which can only be taken over by the State at certain dates fixed according to contracts.

New Surveys and Constructions Sanctioned

The following sanctions of the Railway Board are notified officially:—

A traffic survey of the undermentioned projects being carried out by the agency of the North Western Railway Administration:—

Broad gauge—
(1) Sita Road to Jacobabad with a cross connection from Dost Ali to Larkana.
(2) Conversion of the Larkana-Shahdadkote line and an extension to Jacobabad.

Narrow gauge—
(1) Shahdadkote to Bhagtail.
(2) Shahdadkote to Jacobabad via
(*a*) Garhi Khairo, Usta and Rojhan;
(*b*) Garhi Khairo, Usta Muhammad and Mauladad; and
(*c*) Garhi Khairo, Jafferabad and Mauladad.

These surveys will be collectively known as the Sind Right Bank Feeders Railway Survey.

Also the construction, by the Baroda State, of a line of railway on the 3 ft. $3\frac{3}{8}$ in. gauge, from Prachi Road station on the Junagad Railway, to Kodinar, a distance of 15·72 miles. The line will be known as the Prachi Road-Kodinar Railway.

The Railway Board, moreover, has sanctioned the construction by the Agency of the South Indian Railway Administration of a line of railway on the metre gauge, from Agastiyampalli to Point Calimere, a distance of 5·60 miles. The line will be known as the Agastiyampalli-Point Calimere Railway.

Also the construction by the Agency of the Jodhpur Railway Administration of a line of railway on the 3 ft. $3\frac{3}{8}$ in. gauge, from Jhudo to Pithoro, a distance of 64·11 miles, as an integral part of the Jodhpur-Hyderabad Railway. The project will be known as the Jhudo-Pithoro Railway.

Rail-road Co-ordination

An initial step in the direction of rail-road co-ordination has been taken in the arrangement concluded between Co-ordinated Transport Limited of Calcutta, on the one side, and the East Indian and the Bengal and North Western Railways on the other, for the running of a motor omnibus service between Patna Junction (E.I.R.) and the B. & N.W. ferry station at Digha Ghat, a distance of three miles. Although through booking between the East Indian and Bengal and North Western Railways via Patna and Digha Ghat already exists, passengers are left to find their own way between the two stations. The inauguration of the new bus service will provide them with efficient and dependable transport for the road journey. A charge of two annas for single and four annas for return tickets will be added to the

* Actually, the earnings for the first five months of the current financial year, April-August, amounted to over £1,500,000 more than in the corresponding period last year, and to over £2,160,000 more compared with that period in 1932-33.—ED., *R.G.*

price of 3rd and inter class railway tickets in respect of the road service. The usual allowance for luggage and concession for children available on railways will be granted for the bus journey. The new bus service will be available for through railway passengers only, *i.e.* the public will not be permitted to use the service for journeys between Patna Junction and Digha Ghat only.

Co-ordinated Transport Limited has already obtained a fleet of four buses equipped with V.8 Ford engines. 24 passengers can be comfortably accommodated in each of these buses. The Agent and principal officers of the East Indian Railway recently inspected the fleet at Calcutta and were satisfied that adequate convenience of passengers had been provided. The buses will run to connect with practically all trains at Patna junction and all B. & N.W. steamers at Digha Ghat.

SPAIN

The Railways and Political Strikes

The one-day strike ordered by the Socialist Trade Union leaders in Madrid on September 8 has had an interesting sequel. It was announced that the Central Socialist Trade Union Headquarters (*Casa del Pueblo*) intended to order the men out again on the 15th as a protest against the agrarian meeting to be held in Madrid on that day. This, like the stoppage of the 8th, would have been purely for political reasons, quite unconnected with the conditions of work and pay of the railway staff, and the two principal companies, the Northern and the Madrid, Saragossa and Alicante, with the prior authority of the Minister of Public Works, issued a circular to their staff, with the stern admonition that any employee, of whatever rank, absenting himself on the occasion of an illegal strike, would be subject to summary dismissal, with loss of all privileges. All leave of absence is automatically cancelled at the commencement of any such an illegal movement and any employee not at work or duly justifying the reasons for his absence, will be considered as having joined the movement and will be summarily dismissed. Officials of higher rank are expected to do all in their power to prevent workers joining any such movement, and finally the companies undertake, in the case of death or injury resulting from violence or reprisals, to insure the victim or his family against want, by continuing the payment of the full salary. On the occasion of the strike of September 8, ten of the employees of the two principal companies responded to the orders of the Socialist centre, or at least abandoned their posts, and these men—who include a high official in the Locomotive Department, and also an employee who is one of the members of the Labour Board—have been summarily dismissed, an action approved by the Government.

It is expected that the Metropolitan Underground Railway of Madrid will follow the example of the two big companies, as all their men left work on the 8th. Although efforts were made by the company's officials to continue the service, they were forced to abandon the attempt for the day, owing, it is said, to the police force available being insufficient to ensure safe working at all the stations and throughout the system.

BELGIUM

Novel Week-end Tickets

To popularise Sunday travel, the Belgian National Railways are now issuing special week-end tickets available for return from stations other than the destination on the outward journey. The fares will be 25 per cent. below the ordinary fares, plus, in some cases, a local tax. For instance, a person may travel from Liége to Spa, 33 km., and return from Nonceveux, instead of Spa, 37 km., the third class fares being fr. 6·10 for the outward 33 km., plus fr. 6·80 for the 37 km. return, a total of fr. 12·90.

To avoid abuse, the difference in distance between the outward and return journeys must not exceed 50 per cent. of the longer distance, so that if the longer journey were 100 km., then the shorter one must be at least 50 km. For the convenience of the Accounts Department, these tickets will bear special markings in red, denoting the stations concerned, the routes taken, and the actual distances covered.

U.S.S.R.

New Works

The sum of 3,600 million roubles has been allocated for the construction of new lines during the present year, as compared with only 2,300 million in 1933. Part of this will go to a new electric railway, 315 miles long, connecting Karaganda with Lake Balkhash, and an additional sum equivalent to £215,000 has been allotted to the continuation of conversion work on the Apatite-Khibin section of the Murmansk railway. The number of steam engines turned out by the locomotive building plants during the first half of the present year was 552, or 43 per cent. of the full year's programme.

A new express train, the Polar Star, began running between Leningrad and Murmansk, 1,700 miles, with the inauguration of the summer service. The time taken is 38 hr. 10 min.—giving an overall speed of 44½ m.p.h.—against the old timing of 52 hr. Sleeping and dining car accommodation is provided, and the train is made up of the new standard 55-ton all-steel cars fitted with roller bearings.

SWEDEN

Buffet Cars Introduced

The latest system to adopt buffet cars is the Swedish State Railways. This administration has designed a car which will be divided in two sections, one being equipped as the buffet, the other affording seating for 40 third class passengers. Thus there will be an economy in restaurant car staff and an increase in seating capacity. Such cars will also be run on lines where the traffic does not at present justify the use of restaurant cars. Two cars are at present on order from Kockum's Works at Malmö. They are to be steel cars, 23·5 m. (77 ft. 1 in.) long, and the buffet portion will be 7·5 m. (24 ft. 7¼ in.) long, with a 5 m. (16 ft. 5 in.) table or counter on one side. There are to be four other small tables and one large one, seating 12 persons in all. The cost of the new car is given as 80,500 Kr. or £4,432.

NEW SOUTH WALES

All-round Speeding-up of Services

The Operating and Locomotive Departments of the New South Wales Government Railways have been making tests with accelerating trains. A trial run of the Northern Commercial Limited between Sydney and Newcastle provided some remarkable results. Headed by a C36 class 4-6-0-type locomotive with coupled wheels only 5 ft. 9 in. in diameter, an eight-car train weighing 352 tons covered the 105 miles between these two stations in 143 min. running time. Three intermediate stops were made, one of 12 min. duration, and seven minutes were lost due to permanent way slacks. Of the total distance only about four miles are level, and severe gradients and curves are encountered. The maximum speed recorded was 73 m.p.h., and one stretch of 20 miles was covered in under even time.

It was recently announced that regrading and curve re-alignment would be carried out on this route to enable the Inter City and Northern Commercial expresses to be accelerated by 20 min., the through expresses by 30 min. and local trains by an hour. These reductions in time would necessitate one 50-mile section being covered at an average speed of over 60 m.p.h. The Broken Hill express is to have its time reduced by 2 hr. and the maximum speed raised from 50 to 60 m.p.h.

Railcars and Streamlined Train

The new railcar, which is said to be capable of 70 m.p.h., has proved so successful in service that it is anticipated that more similar cars will be placed in service on the western lines. There is also a proposal to introduce a diesel electric streamline train designed on similar general lines to the Burlington Zephyr in the U.S.A.

THE NEW FRENCH LOCOMOTIVE TESTING STATION

Of the four principal locomotive testing plants in the world, that recently completed at Vitry for the French railways is unique in power and accuracy

The new locomotive testing plant for the French railways at Vitry, near Paris, which was formally brought into use in July, 1933, has been designed to deal with locomotives weighing up to 30 metric tons (29 tons 10 cwt. 2 qr.) per axle, and of lengths up to 25 metres (82 ft. $0\frac{1}{4}$ in.), capable of a tractive effort of 45 metric tons (99,207 lb.) and speeds up to 160 km. (99·4 miles) an hour. At the same time, the foundations allow for the extension of the test platform to 32 metres (104 ft. $11\frac{7}{8}$ in.) if required, and modifications are in progress permitting tests to be made at speeds up to 200 km. (124·3 miles) an hour. Locomotives can be tested developing 1,200 metric h.p. (1,184 h.p.) *per driving axle* at 24 km. (14·9 miles) an hour and 1,900 metric h.p. (1,875 h.p.) at higher speeds.

The locomotive is carried by a series of rimless wheels or rollers placed exactly below the wheel centres. The rollers beneath each pair of coupled wheels in the locomotive drive a Froude brake through a flexible coupling, and the drawbar of the locomotive is attached to a hydraulic dynamometer anchored to a vertical beam set in concrete. Eight pairs of rollers and six brakes are provided, but additional rollers and brakes can be installed.

Referring to Fig. 1, there are two platforms *A*, *B* for the pedestals which carry the roller axles *C* in roller bearings. On either or both of two platforms *D*, *E* (see also Fig. 2) there is a Froude brake *F* connected to the roller axle by a Wellmann-Bibby spring coupling *G*. A longitudinal shaft *H*, running the length of the test bench, and driven by an electric motor at one end, carries a series of worms engaging respectively with a worm wheel on each cross-shaft *J*. This cross-shaft passes through the lower part of each pedestal and drives pinions *K* which engage with racks on *A*, *B*; and in order that the brake *F* may be moved simultaneously with the roller pedestals without imposing any strain on the coupling *G*, the shaft *J* operates a rack and pinion gear at *L* through universal joints *M*.

When preparing for a test, the locomotive is shunted into the test bay, cab first, the wheel flanges resting on special rails *N*, Fig. 1, which hold the treads clear of the rollers *R*. The locomotive is then coupled to the dynamometer drawbar, the centres of the roller axles are set exactly below the centres of the corresponding locomotive axles, and the locomotive is lowered on to the rollers. This is done by rotating the longitudinal spindle *O* by means of an electric motor, worms on this spindle driving a series of worm wheels on tubular cross-shafts, which have right- and left-handed threads at their opposite ends, mating with the operating rods of bell-crank levers *P*. These levers lift the rails *N* above the rims of the rollers, or allow the wheel treads of the locomotive to be lowered on to the rollers as required. During the test, the pedestals are bolted securely to the massive cast platforms *A*, *B*, which are anchored in the foundation blocks as indicated.

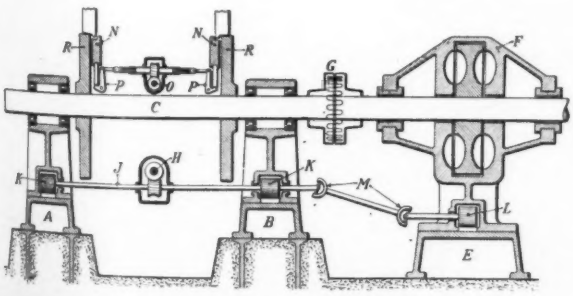


Fig. 1—Diagram of Froude brake

Braking Arrangements and Recording Apparatus

Fig. 4 shows one of the Froude brakes and a pair of rollers. The centrifugal pump in front of the brake is driven from the brake shaft, and as the water for the brake casings passes through this pump, any rise in speed of the locomotive wheels and brake rollers increases the rate of water supply to the brake, thus increasing the braking force in higher proportion and keeping the speed practically constant. Each brake is fitted with an inlet valve between the pump and brake casing and with an outlet valve; and after the control valves of each brake have been adjusted individually, the inlet and outlet valves of the whole group of six brakes can be regulated by two hand-wheels on the control panel, thus permitting the load on the locomotive to be adjusted as required. Each brake is fitted with two electrical tachometers, one on the brake itself and one on the control panel.

Water for the brakes is stored in two 400 cu. metre (88,000-gallon) tanks. A constant-level service tank maintains a low and constant head on the pumps.

On the recorder table, illustrated in Fig. 5, a band of paper is wound from one drum to another by a constant-speed motor, so that all the curves are drawn on a time-base. The tractive effort exerted on the dynamometer is recorded by one of the pens, and the virtual travel of the locomotive is measured by a transmitting roller bearing on the tread of one of the driving wheels.* Mechanical integrating and differentiating devices, of the Amsler sphere type, determine and record the speed and power of the locomotive and the work done. The temperatures and pressures required for a complete test are transmitted and recorded electrically from pyrometers and pressure and depression gauges on the locomotive. The weight of coal burnt is determined by direct measurement, and the water consumption is measured by calibrated tanks and water meters. Automatic CO_2 and CO recorders are installed, together with Orsat apparatus for checking purposes. A laboratory for fuel analyses and determinations of calorific values is also equipped for the calibration of pyrometers, pressure gauges and other instruments used on the test bench. A " stroborama " for the stroboscopic examination of parts in motion is another important item in the equipment.

Operating Features

Smoke and exhaust steam are discharged through an adjustable stack pipe carried by rollers on a track at the bottom of a discharge duct extending the full length of the test bench, as shown in Fig. 2. Trouble from vibration is avoided by balancing all the moving parts, and by fixing the roller pedestals and brakes to heavy platforms

* Some trouble having been experienced from slipping of the transmitting roller, a modified arrangement is being adopted, which is not dependent on adhesion.

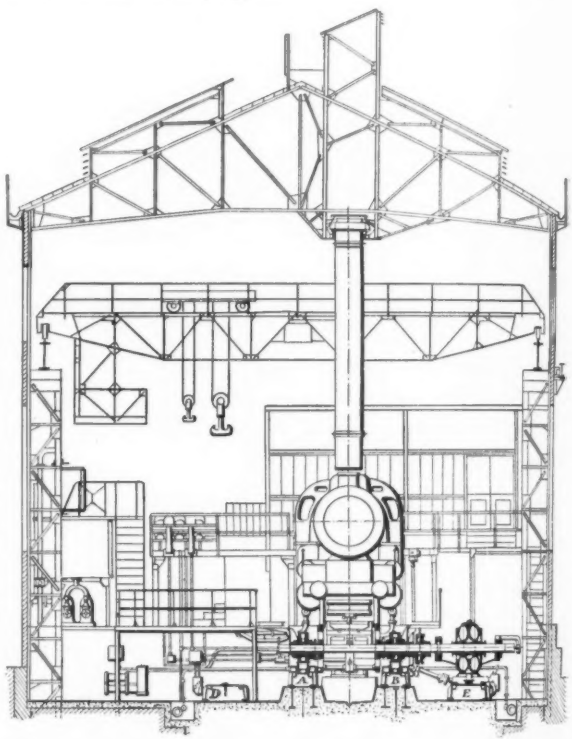
mounted in a reinforced concrete foundation separate from the foundations of the building itself.

The amount of error in measuring tractive effort for a given lack of vertical alignment between wheels and rollers depends on their respective diameters, and in unfavourable cases it may be about 1 per cent. for 1 mm. (0·039 in.) departure from the perpendicular. An apparatus capable of detecting such error of alignment consists essentially of a beam hinged at the centre and carrying at each end a roller which is applied to the tread of the brake roller. The beam is moved laterally until it is level. Its centre is then vertically above the centre of the brake roller and, the support being now fixed so that the apparatus can only be moved vertically, the test rollers are brought into contact with the wheel of the locomotive, which is then moved until the beam is again level. The locomotive wheel is then centred vertically above the centre of the test beam and therefore vertically above the brake roller.

In order to avoid frictional errors, the piston of the hydraulic dynamometer has no packing rings. The fit is so perfect that a pressure of 300 kg. per sq. cm. (4,266 lb. per sq. in.) can be developed without appreciable leakage. The maintenance of such pressures for hours at a time and always in one direction would, however, cause sufficient leakage to allow the locomotive to move forward on the rollers. To prevent this, an electrically-driven compensating pump is kept running throughout the trial. Normally, this pump delivers through a by-pass, but if leakage past the dynamometer piston allows the locomotive to move forward, a contact is made and the by-pass is closed until the restoring pump has brought the dynamometer piston, and therefore the locomotive, back to the correct position.

Monsieur Pierre Place, Ingénieur Principal, Chef de la Division des Essais de l'Office Central d'Etudes de Matériel de Chemins de Fer (O.C.E.M.), was responsible in 1920 for the proposal to build the testing plant, and it was under his supervision that plans were prepared by the O.C.E.M. in collaboration with the Société des Forges et Aciéries de la Marine et d'Homécourt, who undertook the actual construction of the test bench. The brakes finally selected were made by Heenan & Froude Limited, of Worcester, and the dynamometer was supplied by Alfred J. Amsler & Co., of Schaffhausen.

Every precaution has been successfully taken to assure that reliable test results should be obtainable. Our leading article on page 496 should be read in conjunction with the above description.



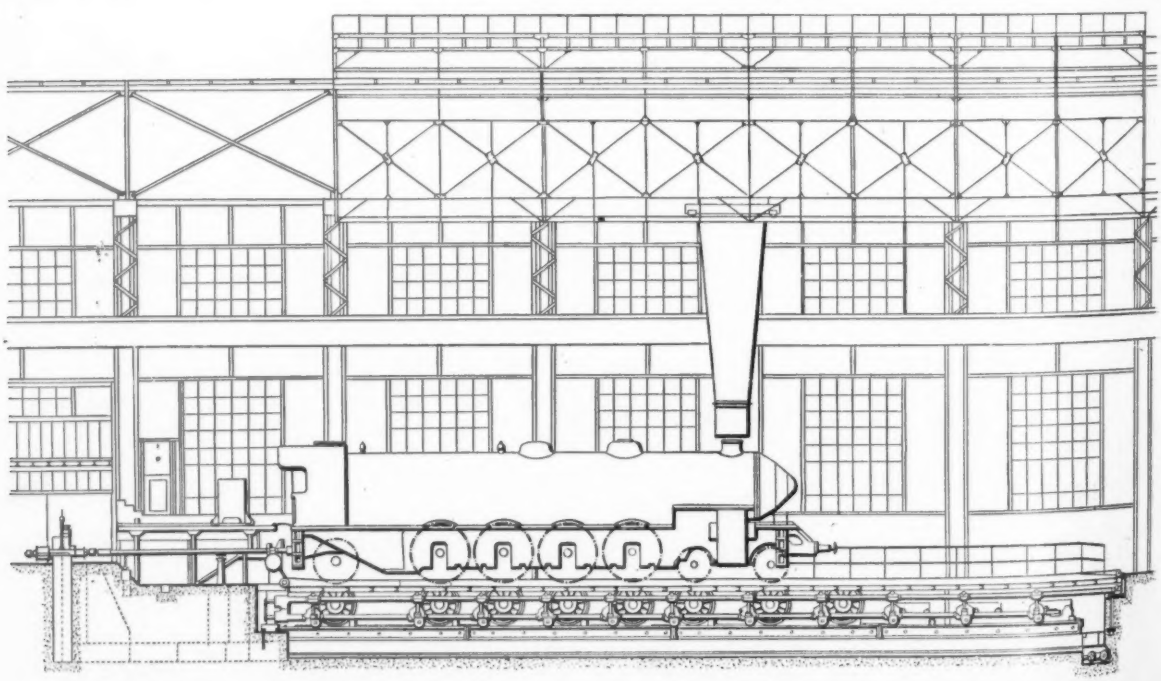


Fig. 2.—Longitudinal and cross-section (above) of the Vitry locomotive testing plant

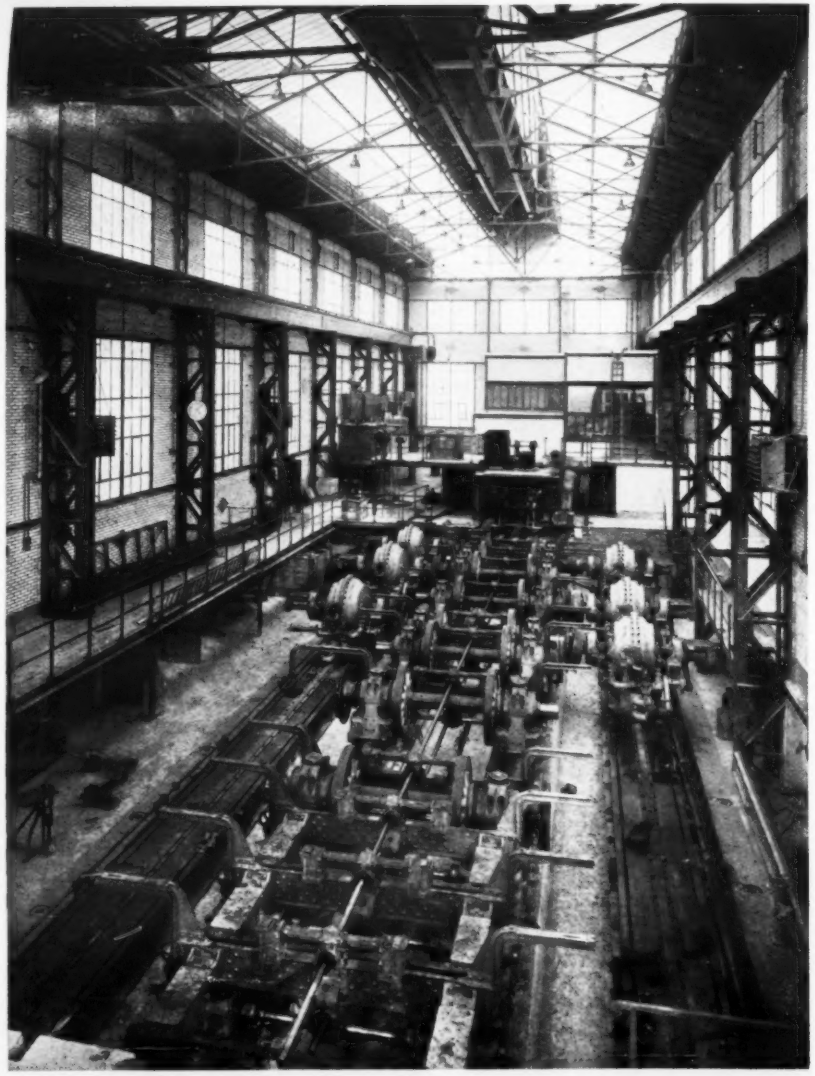


Fig. 3—General view of the Vitry locomotive testing plant

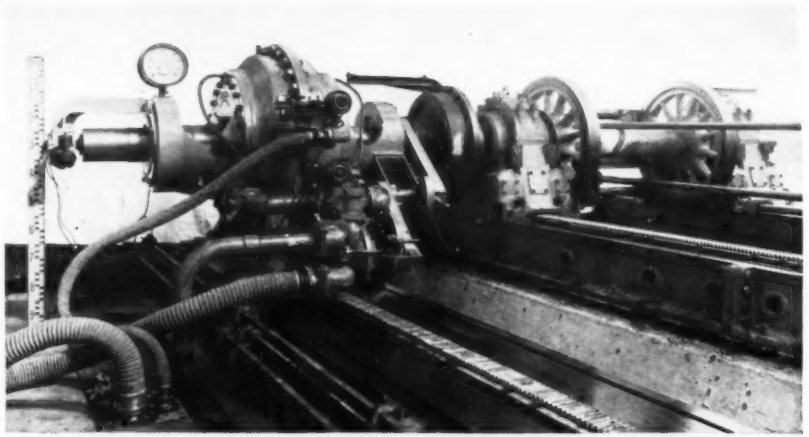


Fig. 4—Froude brake and rollers

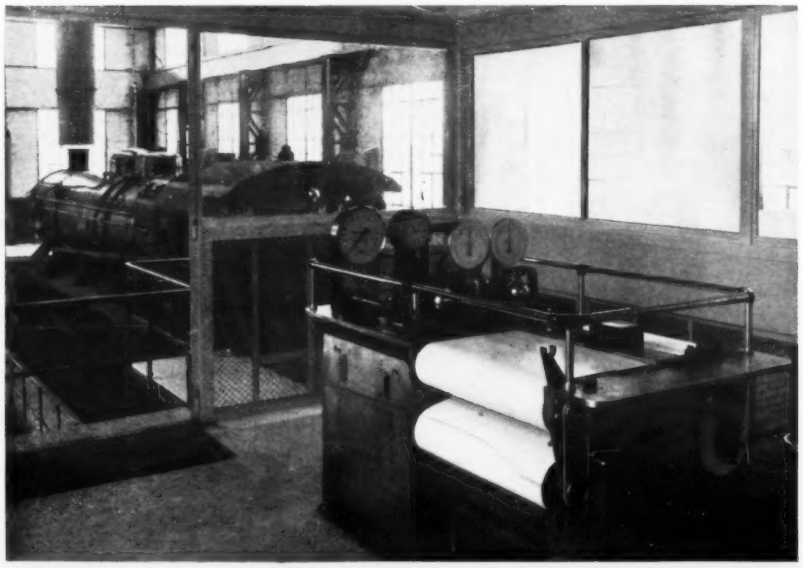
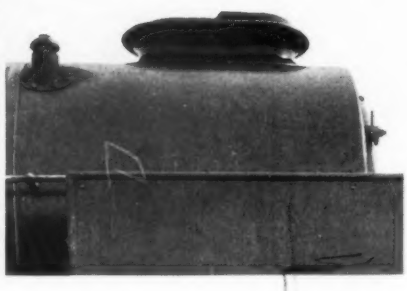


Fig. 5—Dynametric recording table and locomotive under test

THE K.C. DOUBLE EXHAUST SYSTEM FOR LOCOMOTIVES

Application to Southern Railway locomotive

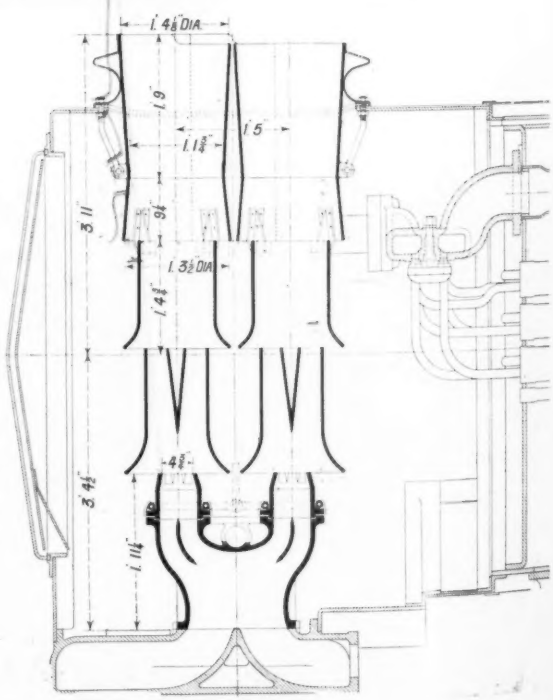


Above : " Lord Nelson " class locomotive fitted with K.C. double blast pipe and chimney, Southern Railway

Left and below : Details of the double blast pipe and chimney

BY the courtesy of Mr. R. E. L. Maunsell, C.B.E., Chief Mechanical Engineer of the Southern Railway, we are able to reproduce herewith a sectional drawing showing the general arrangement of the K.C. double exhaust system as applied by him to engine No. 862, *Lord Collingwood* of the " Lord Nelson " class, and this is supplemented by photographs showing the complete locomotive and the double chimney separately. The arrangement is similar as regards details to that fitted to the Paris-Orleans rebuilt Pacifics, and also to Mr. Gresley's new 2-8-2 express locomotive, *Cock o' the North*, on the L.N.E.R. A point of interest is that in the case of the Southern Railway engine the chimney is entirely built up of sheet metal, thus avoiding the cost of making patterns for casting purposes. Inspection shows that a very excellent job was made of this at the company's works at Eastleigh. The engine has been engaged, since the arrangement was fitted, on its usual duties hauling express trains on the Southern Railway main lines, but it is too early, as yet, to say anything about its performance as modified.

The " Lord Nelson " locomotives have 4 cylinders each 16½ in. by 26 in. stroke, with the inside cranks set at an angle of 135 degrees to the outside cranks, thus producing eight exhaust impulses per revolution. One of the engines, No. 865, *Sir John Hawkins*, has had the cranks altered to the regular 90 degree interval for purposes of comparison. The boiler pressure is 220 lb. per sq. in., and the coupled wheels are 6 ft. 7 in. in diameter.



RAILWAYS AND ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

Railway Companies and Licensing

MUCH interest is being aroused in the West of England by the G.W.R. applications for lorry licences under the Road and Rail Traffic Act, 1933. Opposition by the local branches of the Road Haulage Association and others is very strong, so persistent, in fact, that at one hearing the Licensing Authority was moved to express a doubt whether the road hauliers, whose applications with few exceptions had been granted, could have escaped unscathed from a parallel inquisition. At the various hearings there have been spirited contests between counsel, Mr. Woodward for the G.W.R. and Mr. Watson for the R.H.A., regarding the method adopted in fixing the bases for the stock in possession on the specific date—March 1, 1934—and of applying for the vehicles to be acquired grouped at district headquarters instead of at the points at which they may actually be used. The census on a specific date was inevitable where stock is so constantly shifted about, but the principle involved the production of justification for vehicles which, while employed at Penzance on March 1, and therefore shown in the application, had since, owing to the cessation of the broccoli season, been scattered over the system. Convincing evidence was produced, however by Mr. Bertram Tee, Assistant Superintendent of Road Transport, G.W.R., that under the centralised control adopted, employment could be, and was, found for a floating pool of vehicles to meet the needs of seasonal fluctuations at various parts of the line.

The focussing in the company's applications of vehicles at central points not only met with strenuous opposition but there was also the suggestion that it was a mere subterfuge to baffle objectors. In point of fact, the method seems unavoidable owing to allocation not having been decided upon at the date when the applications had to be put forward. It was thought that this had been recognised by the opposition, but the latter dramatically asked for an adjournment at the recent hearing at Exeter on the ground that applicants were obliged to show the base at which the vehicles would "normally be used" and that the practice adopted placed them at a disadvantage. The opposing counsel said that he had been instructed to oppose a large addition to the company's fleet at Exeter, but that he had learned that some of the vehicles were to be distributed among several stations. It was eventually decided to postpone consideration of the applications in question and to take them, together with others down for hearing at Taunton and Bristol, at a sitting of the Authority at Exeter on October 2, the railway company agreeing to provide the objectors in the meantime with full particulars of the intended allocations and also statistics as to increased tonnage on which they base their claims.

Route Numbers

ONE consequence of the consolidation of bus and tram operations in London has been to bring out the need for some measure of simplification in the route numbers borne by the vehicles. Revisions on a fairly extensive scale come into force next Wednesday, but they hardly come up to expectations. At any rate the numbers are on a definite plan. Double deck buses in the Central area will bear numbers up to 199; single deck buses, 200–289; night and special services, 290–299; Country area buses (Northern section), 300–399; and Country area buses (Southern section), 400–499.

Some of the eight Thornycroft 2-tonners supplied to the Southern Railway, a fifteenth repeat order. They are seen at work at the Bricklayers Arms goods station

Road and Rail in France

DURING recent months we have on several occasions dealt with the steps taken in France, under the law of April 19, 1934, to effect co-ordination between rail and road transport. The main scheme itself was outlined in our issue of April 27 last and it may be recalled that the co-ordination was to be effected by a committee attached to the Ministry of Public Work, a subsequent amendment to the decree extending it to waterways.

The first area in which agreement between the rail and road interest was achieved was the Rouen-Havre-Dieppe one and the arrangements were dealt with at some length in THE RAILWAY GAZETTE of May 25 last.

At the beginning of this month an agreement was reached in the adjoining Beauvais-Amiens-Paris area between the Ch. d f. du Nord and the road carriers as regards passenger transport, with negotiations still proceeding for the goods side. The signatories are to co-operate in the most effective manner possible in order to offer the public efficient combined services and details of the issuing of combined rail and road tickets and the through registration of luggage are to be worked out.

Under the Beauvais scheme six passenger services on the Nord lines, comprising a length of 138 miles, will be abandoned, as well as three services on local secondary lines. Some road services will be withdrawn and others created to replace the passenger train services, in accordance with plans already drawn up. Timetables will also be jointly arranged and it is stipulated that the road vehicles must maintain a luggage service in connection with the railway up to a maximum of 30 kg. (36 lb.) per passenger, as well as express parcels and newspaper services, while, when requested by the authorities, they will be obliged to carry mails. It is agreed that the road services must not compete with the railway for transport between any two places served by a railway line kept open for passenger traffic, and the road companies are to make all their services as far as possible connect with railway stations. The agreement will come into force when it has been approved by the Government.

Representatives of the P.O. and Midi railways have likewise reached an agreement with the motor transport interests in the Pau area. This agreement is drawn up on the same lines as the Rouen pact. The railway abandons the transport of passengers and goods on certain sections of the lines and concentrates on that between the principal stations only. The road operators on their side make concessions in the long distance traffic. On the line from Pau to Canfranc, the station on the Spanish side of the frontier, trains will stop only at Oloron, Bedous, and Canfranc. Intermediate stations will be served by road vehicles. Railway services between Pau and Laruns will be discontinued, road services replacing railway traffic throughout the Ossau Valley.

A similar agreement applying to the department of Les Deux-Sèvres has been signed at Niort by 23 road transporters and the State Railways. Railcars and expresses will be run between the principal centres to speed up the passenger services and give frequent connections with main line trains. The small stations will be served by more frequent road services, which will also serve all the villages remote from the railway. The director of the department's postal services is considering a plan for the reorganisation of the postal deliveries in connection with the new agreement.

In some cases local interests are opposing the proposed closing of stations under the new co-ordination schemes. The municipal council of Fougères in the Rennes area recently sent a delegation to Paris to place before M. Flandin, Minister of Public Works, the principal objections of the population to the closing of the station to passenger traffic. The delegates stated that more than thirty families were dependent on the station for their livelihood. The Fougères station served a population of about 25,000 and formed a natural link between the main line from Paris to Brest and the line from Lisons in Normandy to Lamballe in Brittany. The Minister replied that the arguments of the delegation would be carefully considered by the co-ordination commission.

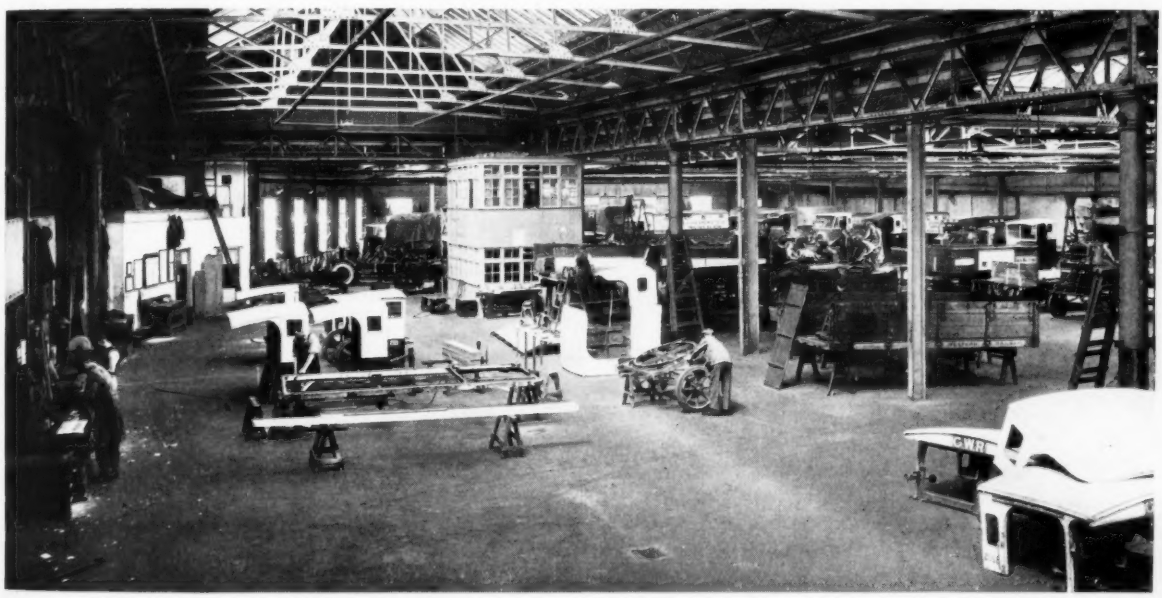
One of the Bantam type Karrier delivery vans used by the L.M.S. and Southern Railways. The vehicles, which do not exceed 2-ton unladen, carry box van bodies equipped with hinged doors and tailboard, while from the interior of the easy-access driver's cab the van may be entered through a sliding panel door on the near side

A Repair Shop for G.W.R. London Lorries

*How the company's road transport fleet in London is maintained in efficiency**

THE rapid growth in recent years of the Great Western Railway Company's fleet of road motor vehicles in the London area has necessitated the organisation by the Road Transport Department of a comprehensive scheme of maintenance. To-day there is a fleet of well over five hundred motor vehicles, covering in service more than 70,000 miles a week. Although the motorisation of the company's London cartage services has been in progress for some years, horse-drawn lorries still substantially outnumber motors.

The maintenance of Great Western road vehicles of all kinds for the London area is centred upon a large and well-equipped repair shop at Alfred Road, Westbourne Park. For many years there had been a small repair shop at that place, but about two years ago the old shop was incorporated into a greatly extended and commodious structure, 230 feet by 120 feet. The building is steel-framed and asbestos covered, excellently lighted by roof and side windows, and has the valuable feature of being largely free from floor obstruction in the form of roof supports.



General view in the G.W.R. Road Transport Department's repair shop at Alfred Road, Paddington. The foreman's office is above the tool room in the centre

At one side of the repair shop is a range of ten inspection pits of modern design, supplemented by a useful additional area of floor space at pit level, which is approached by a short flight of steps at each end of the range of pits. At the ground floor level, guard rails are placed at the edge of each pit to obviate all danger of a lorry or chassis being over-run.

Under-chassis examination is facilitated by each pit being flood-lighted by two electric lamps. These are swivelled and may be focussed upon any point in the pit area. In the open space at pit level, work-benches are conveniently placed for the use of the fitters.

A most interesting feature of this up-to-date shop is the provision of underground ducts to carry off exhaust fumes from the lorries. When it is necessary to run the engine of a lorry, its exhaust is connected by a flexible pipe to one of the many ducts available; an electric fan is then set in motion and sends the fumes high into the open air outside the shop.

Before going into further detail of repair shop equipment, an outline should be given of the general scheme of maintenance of vehicles. In brief, every motor vehicle in service is brought to the repair shop once every six weeks, for inspection, and as nearly as practicable once every two years for a comprehensive overhaul. These services are known, respectively, as the short-period and long period inspections. The arrangement has been found to work smoothly, and to keep the company's road fleet at a high level of efficiency.

The short-period inspection is designed to give assurance that the vehicles are in good running order, and to provide a timely opportunity for any necessary adjustments and "tuning up." The work on each lorry is normally completed within eight hours.

A matter of some interest is the simple but effective method by which vehicles are marked for the purposes of the short-period inspection. In addition to its identification number and depôt symbol, each lorry is marked with a letter A, B, C, D, E, or F, corresponding to one of the six successive inspection weeks, and a number 1, 2, 3, 4, or 5, indicating a day of the week, Monday to Friday. By this means it is always known to officials and drivers exactly when any vehicle is due for its inspection

* Reprinted from the September issue of the *Great Western Railway Magazine*

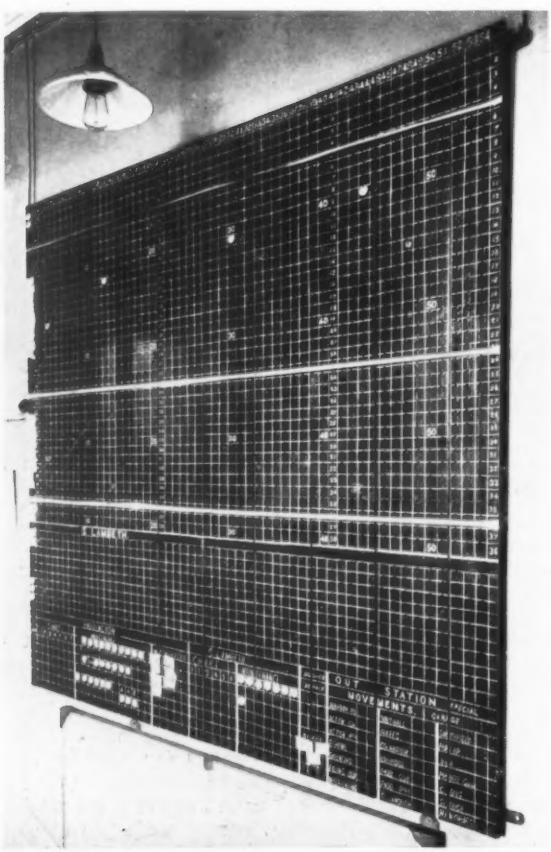
in the repair shop. The value to all concerned of this immediately apparent knowledge can be readily appreciated.

A record sheet is issued after every inspection, showing what work has been done on a vehicle and by whom. This sheet is handed to the driver for further notes, as may be necessary, while the vehicle is in service, and is returned to the repair shop on the next inspection, when it is filed, and a fresh sheet issued. By this means a complete history is available of the work done on every lorry. For breakdowns in service (fortunately rare) an emergency docket is provided.

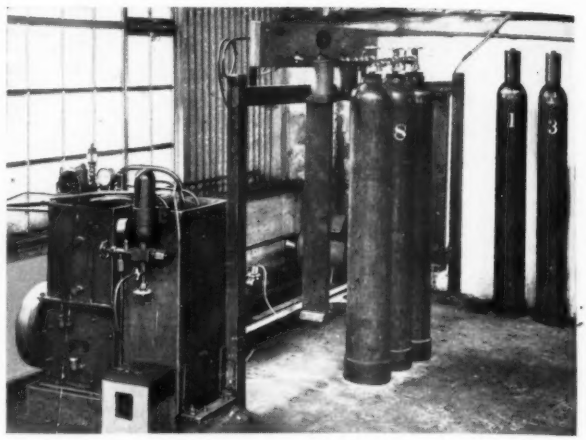
It will be appreciated that the long-period overhaul is a more exhaustive examination, and a certain amount of repair and renewal of parts is the rule, as well as a general re-painting. A lorry may be in the repair shop for a fortnight or longer on its biennial overhaul. Emergency work is also done as and when required.

An effective system for indicating the position of vehicles temporarily out of service has been adopted by the mechanical supervisor in charge of the repair shop. One of the walls of his office is largely occupied by a blackboard, on which squares are ruled, each having a tiny rivet above. The vertical lines of squares are numbered across the top, left to right, No. 1 to No. 54.

The system is for each vehicle out of service to be represented by a coloured disc hung over a square. A yellow disc indicates a vehicle out of service and not being worked on, a green disc a vehicle out of service and being worked on, a red disc a vehicle out of service awaiting spare parts. The figure on which a disc is placed shows the number of days the vehicle it represents has been in the repair shop. When a lorry comes into shop its number is entered on the left-hand side of the board, and opposite to it a disc of the appropriate colour is pegged on No. 1. Thereafter, the disc is moved forward one square each day until the lorry is sent back into service. For example, a red disc on a No. 5 square indicates a lorry that has been in the shop five days and is awaiting spare parts, while a green disc on a No. 12 square shows that work is in progress on a lorry which has been in the shop twelve days.



The ingenious arrangement in the Alfred Road repair shop for indicating the position of vehicles temporarily out of service



The air compressing plant and storage cylinders, used for the inflation of lorry tyres

Other portions of this ingenious and informative board give indications (*a*) of spare bodies of various types in service and available, and (*b*) of the places where outstation fitters are engaged on any particular day.

The total staff employed at the Alfred Road repair shop is 85, comprising supervisory and clerical staff, fitters and their mates, wheelwrights, painters, &c.

It should be said that the whole of the repairs and repainting of the company's London horse-drawn vehicles have also been carried out at this shop since it was rebuilt about two years ago. A spray-painting plant has recently been installed.

The company's road vehicles are all garaged at the depôts to which they are allocated. In addition to the repair shop at Alfred Road, there are two important service stations, *i.e.*, at Paddington and South Lambeth, with staffs of 20 and 18, respectively, while leading fitters, each with a small staff, are employed at Smithfield, Acton, and Southall in control of sub-areas.

The Paddington service station is unique in being open day and night; this station is responsible at night for dealing with emergency calls for the whole London area. Minor running repairs are carried out at the Paddington and South Lambeth service stations, as well as washing, tyre service, and the issue of petrol and oil. Up-to-date equipment is provided for these purposes. It may here be mentioned that from the Paddington service depôt alone upwards of 6,000 gallons of petrol are issued weekly.

An exceptional work that has been lately carried out at the repair shop is the substitution of pneumatic for solid tyres on a large number of the company's lorries. The process of conversion is now practically complete, and pneumatic tyres will soon be universal in the company's London cartage service.

An air-compressing plant has been installed at the shop, by means of which steel storage cylinders (known as bottles) are pumped up to 1,800 lb. pressure per square

inch. The bottles are fitted with valves which reduce the ejection pressure to 200 lb. per square inch for the inflation of lorry tyres. The principal value of this installation is the speed and ready availability of tyre-inflation service. The bottles are easily portable and are available for use at the various service stations, and also at any point in the repair shop itself, or even on the road. So effective has the compressed air service proved itself, that the service is being extended.

Two secondary uses of the compressed air service may be referred to. One is that by means of air injected into steel barrels of lubricating oil at the service stations, oil is pumped up through a meter attached to the barrel and delivered to the lorries as required. Compressed air is used also in the repair shop for operating a sand blast for cleaning sparking plugs.

The Alfred Road shop is equipped with a range of machine tools driven by an electric motor through the medium of a single-line shafting; for lifting purposes portable gantries have been provided.

Various other important appliances are provided for handling routine work efficiently. These include a test bench for lorry lighting, battery charging plant, sparking-plug cleaning and testing apparatus, oxy-acetylene welding plant, brazing hearth, &c. A special jack is available to facilitate the removal of heavy wheels from their axles, and their replacement.

The shop stores is, of course, well stocked with spare parts and materials for both horse and motor vehicles. A two-story structure inside the shop serves the dual purpose of the shop foreman's office, on the upper floor, and a tool room below. This building is excellently placed both for purposes of supervision, and for easy accessibility by the fitting staff.

Outside the shop is a large asphalted yard which is put to various uses, one of them being that of a testing ground for drivers. Lorry drivers are recruited from the company's staff, largely from the ranks of horse carmen, owing to horse-drawn vehicles being superseded. The men are carefully trained in the various phases of safe driving, including practice on a "skidpan," by arrangement with the London Passenger Transport Board.

THE A.E.C.-MONARCH LORRY

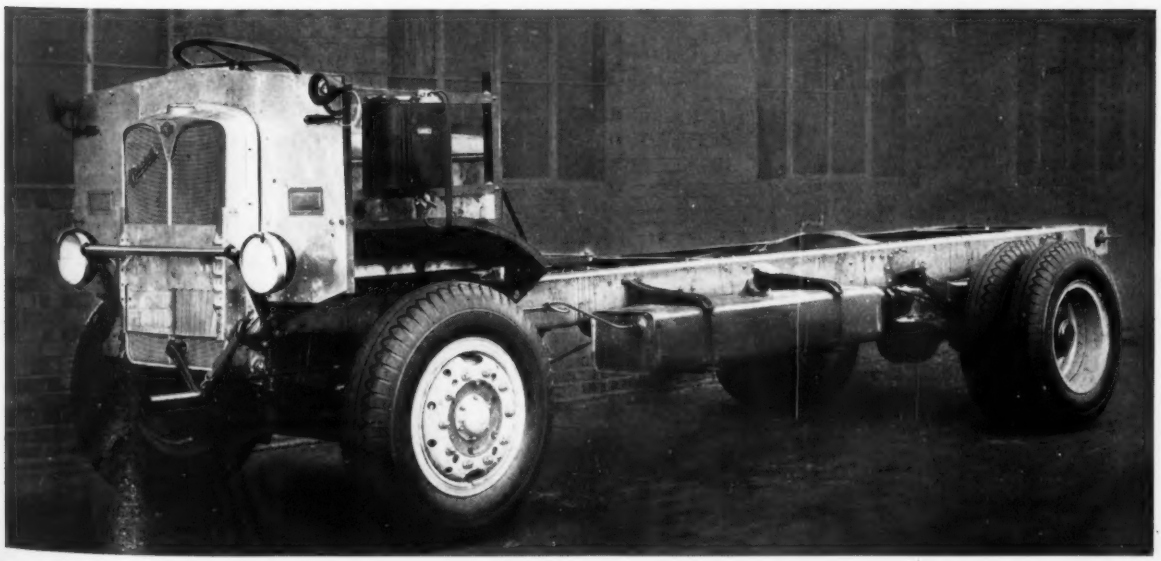
A type of vehicle included among those for which British railway companies have recently placed orders. Designed to carry the maximum load allowed on two axles

AMONG the various designs of goods-carrying vehicles produced by the Associated Equipment Co. Ltd., that designated the Monarch has established a fine reputation and being in the class to carry the greatest total load allowed by law on two axles, it is likely to be even more prominent because of the high ratio of carrying capacity to unladen weight.

The photographs reproduced bring out the sturdiness and clean design of the chassis and they show one of the twenty ordered by the Great Western Railway recently. With the exception of the fitting of the B.W. Handy governor to the engine as seen in one of our illustrations, and one or two small modifications to conform to G.W.R. practice, these vehicles follow the A.E.C. standard specification.

These chassis are fitted with the four cylinder petrol engine of 31·1 rating which develops 65 b.h.p. at 2,000 r.p.m., but alternative power plants are available in the shape of the A.E.C.-Ricardo four cylinder oil engines of the 70 or 85 b.h.p. types. The petrol engine has cylinders of 112 mm. bore while the stroke is 130 mm.; they are fitted with hardened steel liners and the overhead valves have detachable seats screwed into the cylinder head. Magneto ignition is installed and there is a thermostatic control of the cooling water, which is circulated by a pump. There are five main bearings with oil forced to them as well as to the big-ends.

The transmission includes a single plate clutch with 360 square inches of surface, an adjustable stop and a single point adjustment under the driver's feet. There

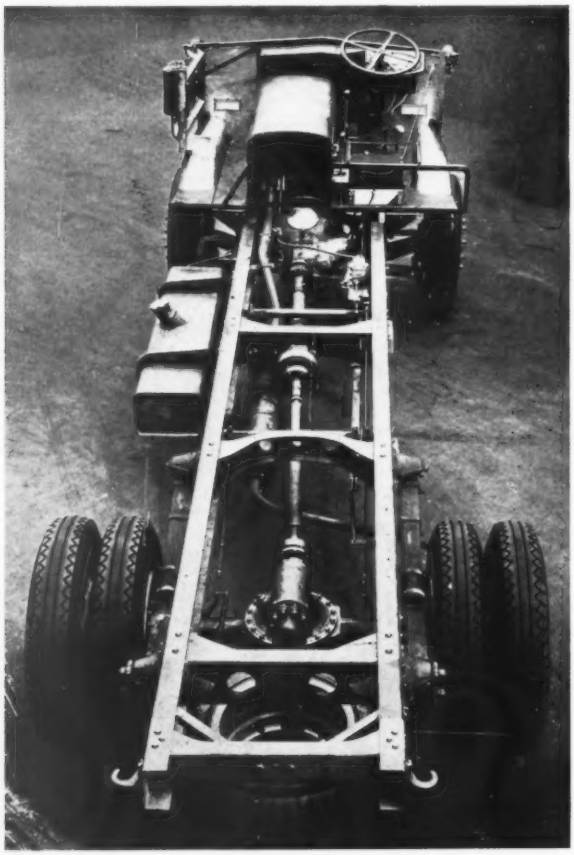


Side view of the A.E.C.-Monarch lorry now being supplied to the G.W.R. for dealing with 6-ton loads

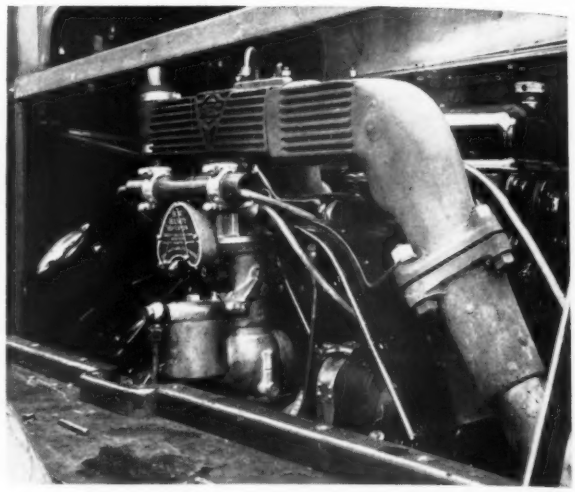
is a fourspeed gearbox with wide, ground gears and the combination for third speed of the constant mesh type. The speeds with the normal back axle ratio are given as 7·6, 12·4, 21·0 and 33·4 m.p.h. The ball-type gear lever is mounted on the engine but in the bonneted types of chassis it is arranged on top of the gearbox, a power take-off for driving pumps, winches or other equipment can be provided and a tyre pump can likewise be arranged for.

The rear axle is a nickel steel forging with the overhead worm carried in a detachable casing and the hubs carried on large roller bearings. Nickel steel is also used for the frame, $\frac{5}{16}$ in. thick, the maximum section being 9 in. with 3 in. flanges. The alloy steel front axle is a stamping of heavy section with the swivel axles and hubs machined from stampings and carried in large taper roller bearings. The steering gear is of the Marles type. There is a vacuum servo to assist the application of the foot brakes in the drums on all four wheels while the hand lever operates the foot brake shoes on the back wheels only. High pressure, 36 by 8 in. tyres are fitted, twins on the back axle, and the specification includes one spare wheel and tyre.

Electric lighting is included, of course, the set being the 12-volt C.A.V.-Bosch with the D45B dynamo, five lamps, with Graves bulbs for dimming, switchboard and ammeter and 70 ampere-hour battery. The wheelbase of the forward control type is 14 ft. and that permits of a platform area of 16 ft. 6 in. by 7 ft. 6 in. The track is 5 ft. 10 in. in front and 5 ft. 7 in. at the rear and the vehicle will turn in a circle of 56 ft.



A view from above of the A.E.C.-Monarch chassis

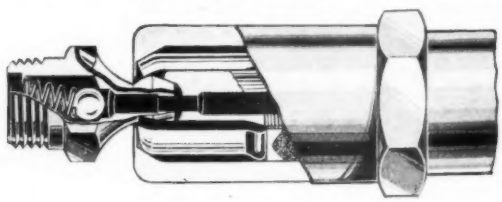


This view of the A.E.C.-Monarch engine shows the B.W. Handy governor in position

There is supplied with each chassis a speedometer, electric horn, as well as the necessary tools, spare parts and garage equipment. The normal back axle ratio is $7\frac{1}{4}$ to 1 but there are five others ranging from $5\frac{1}{5}$ to 1 to $10\frac{2}{3}$ to 1.

A Tecalemit Improvement

THERE will be many operators who will note with appreciation the detail improvement which is now embodied in what is termed the new Tecalemit hydraulic lubrication system, as it facilitates, as well as ensures, the requisite attention to lubrication points in positions not too easy to reach. It consists in the provision to the well-known Tecalemit Zerk type nipples of an extension tip which can be clasped firmly by the gun nozzle which, in its turn, has arranged inside it three spring-loaded jaws designed for the purpose. The nozzle easily slips on to the tip to form a positive connection and any additional purpose necessary to force the lubricant to the bearing will also serve to lock the nozzle and



The new hydraulic Tecalemit nipple and adaptor in position

nipple firmly together while a slight lateral movement of the nozzle or adaptor is sufficient to disconnect it when lubrication has been completed. From this it will be seen that the necessity of holding the gun hard on the nipple is eliminated and there is no tendency to lose lubricant through over-feeding while at the same time the oil or grease can be fed to the bearing at a higher pressure than was possible with the old style nipple. The illustration shows the general arrangement of the scheme and the nipples are available in all standard forms of threads, and copies of a list giving details of sizes and prices can be obtained from the Tecalemit headquarters on the Great West Road, Brentford, Middlesex.

RAILWAY NEWS SECTION

PERSONAL

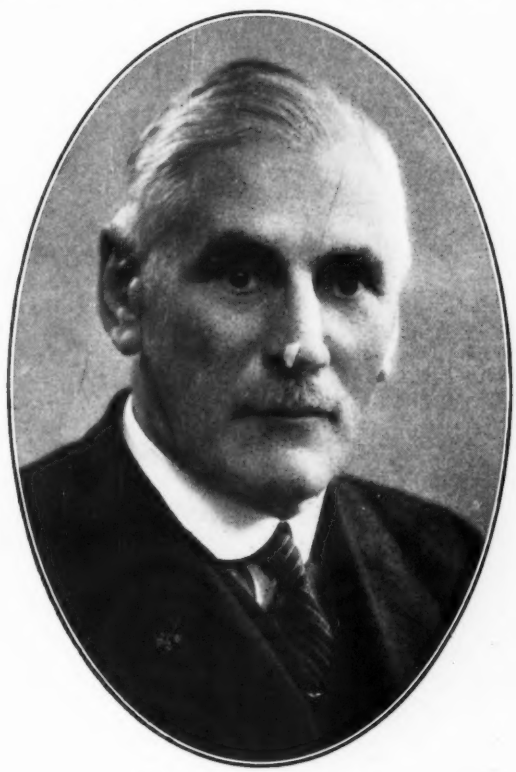
Mr. H. P. M. Beames, Deputy Chief Mechanical Engineer, L.M.S.R., who is retiring at the end of this month, after nearly 40 years' service with the L.N.W. and L.M.S. Railways, entered Crewe works as a premium apprentice in January, 1895, afterwards becoming a pupil of F. W. Webb, and later being placed in charge of Carlisle Shed and District for a short time. In 1899 he became Junior Assistant to the Works Manager at Crewe, but on the outbreak of the South African War was permitted by the railway to volunteer, and served in the Western Transvaal operations during 1900-01. He returned to Crewe in June, 1901, and was appointed Assistant Outdoor Superintendent in 1902 and Personal Assistant to the Chief Mechanical Engineer in 1910; this position he held until August, 1914. With the permission of the directors he then again offered his services, and was given command of the 110th Company Railway) R.E. Mr. Beames held this position until seconded as Works Manager at Crewe in charge of munition work and preparing locomotives for war service. Upon release from military duty in 1919, however, he was appointed Deputy Chief Mechanical Engineer, L.N.W.R., being promoted to be Chief Mechanical Engineer of that system in the following year. As a result of the amalgamation of the L.N.W. and L. & Y. Railways, Mr. Beames became Divisional Mechanical Engineer, Western Division, in January, 1922, and, on the formation of the L.M.S.R., was designated Mechanical Engineer, Crewe, just a year later. On various occasions Mr. Beames has visited France, Italy, Germany, and U.S.A. in order to study foreign railway practices. During 1925, 1926 and 1927 he designed and carried out the complete re-organisation of Crewe locomotive works and introduced the progressive system of repairing locomotives, on what has come to be known as "the belt," for the first time in Europe. It was in 1931 that he became Deputy Chief Mechanical Engineer, L.M.S.R. He is a Member of the Institutions of Civil Engineers, Mechanical Engineers, and Locomotive Engineers. He is also a County Councillor for Cheshire and a J.P. for Crewe.

Mr. F. A. Brant, O.B.E., Assistant for Continental Traffic to the Traffic Manager, Southern Railway, is retiring on September 30. He has occupied this position since the formation of the Southern Railway in 1923, and the importance of the post may be gauged by the fact that Mr. Brant has been responsible for no fewer than ten cross-Channel Continental services run by and in conjunction with the Southern Railway. Entering the London, Chatham & Dover Railway service in 1889, Mr. Brant served in various traffic departments until attached to the staff of the Superintendent of the Line in charge of time-tables and special traffic. In 1897 he was transferred to the Continental Traffic Manager's office, in which he was subsequently appointed Chief Clerk. In 1914 he became Inspector of Continental

Photo.] [Lafayette

Mr. H. P. M. Beames, M.Inst.C.E., M.I.Mech.E.

Deputy Chief Mechanical Engineer,
London Midland and Scottish Railway,
1931–34



Mr. F. A. Brant, O.B.E.,

Assistant to the Traffic Manager for Continental Traffic,
Southern Railway,
1923–34

agencies, with headquarters at Boulogne. From the outbreak of war until the end of 1915, Mr. Brant was in charge of South Eastern & Chatham Railway interests at Boulogne, and rendered liaison services between the railway company and the Admiralty and War Office for the transport arrangements of the British Expeditionary Force. At the end of 1915 he was transferred to London, and, owing to his expert knowledge of foreign languages and intimate experience of Continental railway practice, he undertook special missions for the War Office Intelligence Department to various parts of the Continent. He also organised overland transport of coal for the Italian State Railways from Bordeaux at the time of the submarine menace in the Mediterranean. In 1920 Mr. Brant was appointed Continental Traffic Assistant to the General Manager of the South Eastern & Chatham Railway. He is an officer of the Order of the British Empire and holds several Continental distinctions including the Legion of Honour (France), Crown of Italy, and Belgian and Dutch orders.

We regret to learn of the death on September 21 of Mr. Frederick George Welch, who was District Goods Manager of the L.M.S. at Leeds from 1921 until his retirement in 1926. Former posts held by him were: Goods Agent, first at Camden, then at Broad Street, and subsequently Assistant London Superintendent. The funeral took place at Watford on September 25, among those present being Messrs. S. H. Hunt, Fred Sargent, R. F. Castleman (Retired Officers Association) and a number of other officials of the L.M.S. Many messages of condolence were received from all parts of the country, including those from Sir Herbert Walker and Messrs. Ashton Davies, A. L. Castleman, J. Papworth, F. V. Dingley and John Pike.

We regret to record the death, on September 26, of Mr. Laurence Currie, M.A., J.P., a Director of the Great Western Railway since December, 1922. Mr. Currie was a Managing Partner in Glyn Mills & Co. and his other directorates included the Gresham Life Assurance and Gresham Fire Insurance Societies and the Union Discount Company of London. Born in 1867, he was educated privately and at Trinity College, Cambridge. Mr. Currie was a Member of the Royal Commission on University Education in London, 1909-13, Member of the Council of India, 1911-18, a Public Works Loan Commissioner and a J.P. for Hampshire.

Mr. George W. Duncan has resigned his position as Publicity Manager of the London Passenger Transport Board as from the end of this month. We understand that he has severed his connection in order to have more time to devote to his personal affairs, and a wide circle of friends in the transport industry will regret his decision. Mr. Duncan was educated at Merchiston Castle School, Edinburgh, and Edinburgh University. He began his business career with the late Lord Cunliffe, Governor of the Bank of England, and served during the war in France and at the War Office. He became associated with Lord Ashfield in 1922 as his personal secretary. As the result of this

Mr. G. W. Duncan

Publicity Manager, London Passenger Transport Board, 1933-34

association Mr. Duncan transferred his activities to the Underground group of companies in May, 1923, and in 1928, after a short period as Assistant to Mr. Frank Pick, he was appointed Staff Officer of that group. In 1929 he became Publicity Manager of the Underground company and its associated railway, omnibus, and tramway enterprises, and, on the establishment of the London Passenger Transport Board as a working entity, at the beginning of July, 1933, Mr. Duncan was appointed Publicity Manager of London Transport.

We regret to record the death, on September 15, of M. Maurice Moyrand, son of the late Traffic Superintendent of the Northern of France Railway, who was killed in a motoring accident. His funeral took place at Limay on September 20, and among those present were MM. Javary and Besnerais, past and present General Managers, and M. Vagogne, Administrative Secretary General, of the Northern Railway; M. Margot-Noblemaire, General Manager, International Sleeping Car Company; Mr. C. Grasemann, Public Relations and Advertising Officer, Southern Railway of Great Britain, and many other prominent railway men. M. Maurice Moyrand was quite a young man, but due to his charm, intelligence and industry, in addition to his artistic feeling, had in a short time developed the business of Cie Artistique de Publicité, the printing firm at Lille, and was in charge of a very successful branch in Paris. He had handled the whole of the publicity which was effected in 1933 jointly by the Northern of France and the Southern Railway of England to bring French people to England, and this year had handled a similar campaign between the Northern of France and the four British railways. Various striking and colourful Southern Railway posters designed by Molenaar, another eminent artist, owed their origin to the initiative of M. Moyrand. The English railways lose an excellent business friend, and those who knew his charming and engaging personality feel the loss personally.

Waterloo News Theatre, Southern Railway

(See illustrations opposite)

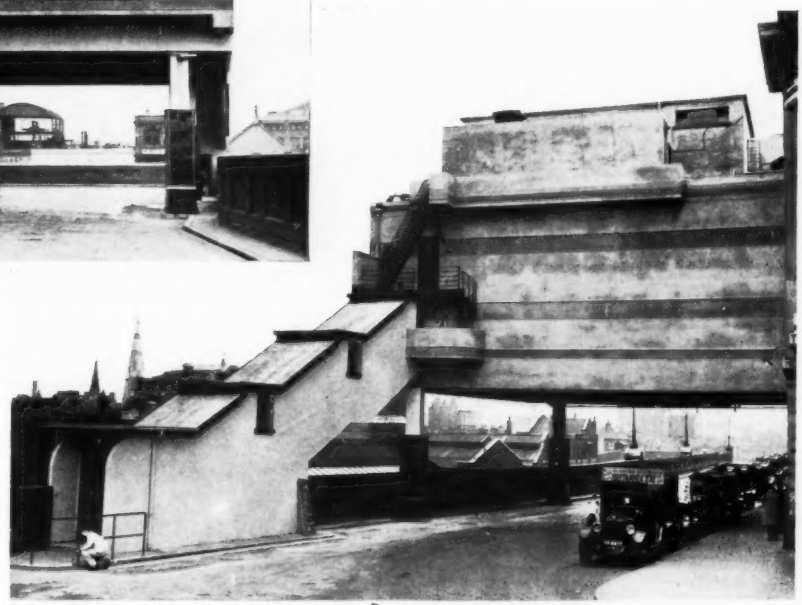
The news theatre at Waterloo station, Southern Railway which was opened on August 27, is proving very popular, and increasing numbers of people are patronising it each week. This theatre was designed by Mr. Alistair MacDonald, the son of the Prime Minister, and the projection is a new invention whereby a mirror is used in place of the usual screen, and a stereoscopic illusion created in the reflected picture. The film itself is more clearly defined, as the reflected picture avoids distortion, and eyestrain is thereby practically eliminated. The projection is the only one of its kind yet to be used in a cinema.

The theatre itself has a seating capacity of 250 and is built out over the approach road from the Westminster Bridge Road with the front facing on to the station and adjoining No. 1 platform. It is in every way a luxury news theatre, as by reason of the system of projection a perfect view of the pictures is obtainable from any seat in the house, and, contrary to the usual cinema theatre, the front seats are, if anything, better than the back seats.

For the convenience of passengers, the train arrival times and the number of the platform are shown on the screen at the side and visitors to the cinema have only to inform the paybox cashier of the train which they require to be so announced, in order for this to be done. The theatre is open from 9.45 a.m. until 11 p.m. on weekdays and from 5.45 p.m. until 11 p.m. on Sundays. The programme is continuous, lasting on an average one hour, and contains both Paramount and Universal sound news, travel and other films of interest, and the ever popular Mickey Mouse or Silly Symphony.

Waterloo News Theatre, Southern Railway

(*See article opposite*)



Following the successful introduction of a news cinema theatre at Victoria station, the Southern Railway has recently provided a similar amenity for passengers at Waterloo. As may be seen from the photographs we reproduce, even Epstein would find it difficult to modernise this railway waiting room

NEWS THEATRE
OPEN
TRAIN ARRIVAL TIMES WITH NUMBER OF PLATFORM ARE ANNOUNCED ON THE SCREEN
PATRONS ARE REQUESTED TO INFORM PAY BOX CASHIER TRAINS THEY REQUIRE ANNOUNCED
ENTRANCE

Supplementary Reserve Transportation Units, R.E.

Scenes at the annual training, 1934, at Longmoor Camp

(See article on opposite page)

Above: Constructing temporary low level bridge at Hollywater

Left: Cutting a 2-ft. tree with pneumatic chain saw

Right: View showing temporary low level bridge on right; and steam pile driving crane carried over swamp on sleeper cribs ready to drive pile foundations for permanent high level bridge

Supplementary Reserve Transportation Units, R.E.

Annual Training, 1934

The annual training of the Supplementary Reserve Units of the four main line railway companies at the Royal Engineers' Railway Training Centre, Longmoor Camp, Hants, under the Commandant, Lt.-Col. L. Manton, R.E., and his staff has now been completed. As was pointed out in the article on the Woolmer Instructional Military Railway in THE RAILWAY GAZETTE for November 25, 1932, the training consists of one week's military and one week's technical training. The latter takes the form of lectures, schemes, and practical work, and is designed to bring out clearly the difference between military railway work with its quicker and cruder methods, and the more deliberate and stereotyped practice of civil railways. The necessity for developing the initiative and adaptability and the power of improvisation of the personnel and, generally, of giving them a changed outlook from that obtained in the performance of their civil duties, is constantly kept in mind in the training.

Below is a list of the units which underwent training at Longmoor during the past summer:—

May 31 to June 14	H.Q. Operating Group. Commanding Officer:—Brevet Colonel W. E. Blakely, M.M., R.E., (S.R.) 153rd (L.N.E.) Railway Operating Company. Commanding Officer:—Major H. F. Sanderson, R.E. (S.R.) 154th (G.W.) Railway Operating Company. Commanding Officer:—Major S. E. Tyrwhitt, R.E. (S.R.)
June 14 to June 28	H.Q. Docks Group. Commanding Officer:—Lt.-Col. H. S. Cole, R.E. (S.R.) 157th (L.N.E.) Railway Docks Company. Commanding Officer:—Major J. R. Sadler, R.E. (S.R.)
July 3 to July 17	150th (L.N.E.) Railway Construction Company. Commanding Officer:—Major J. Scott, M.C., R.E. (S.R.)
July 18 to Aug. 1	151st (G.W.) Railway Construction Company. Commanding Officer:—Major and Brevet Lt.-Col. F. T. Bowler, R.E. (S.R.)
Aug. 2 to Aug. 16	155th (L.M.S.) Railway Workshop Company. Commanding Officer:—Major J. V. Denning, M.C., R.E. (S.R.)
Aug. 21 to Sept. 4	152nd (G.W.) Railway Construction Company. Commanding Officer:—Major F. Holland, R.E. (S.R.) H.Q. Stores Group. Commanding Officer:—Lt.-Col. H. A. Short, M.C., R.E. (S.R.) 156th (S) Railway Stores Company. Commanding Officer:—Major A. B. Chester, R.E. (S.R.)

Also attended camp at Longmoor:—

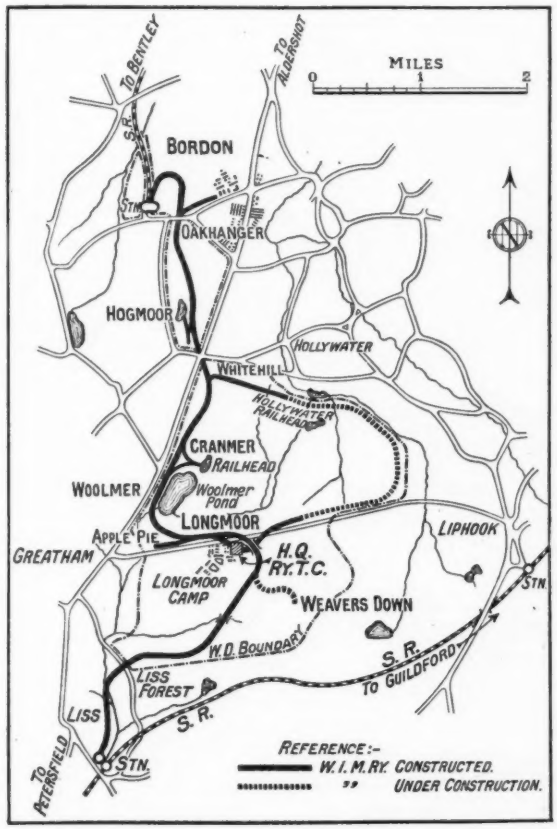
Aug. 2 to Aug. 16	No. 2 Company L. of C. Signals (L.M.S.) Railway. Commanding Officer:—Major R. Tandy, R.C.O.S. (S.R.)

The operating companies were given an exercise on the Woolmer Instructional Military Railway, reproducing as far as possible active service conditions. The construction companies continued the construction of the Hollywater branch which is at present at a particularly interesting phase. The stores and workshop units carried out a theoretical exercise as well as a practical exercise involving expedients and fieldworks.

The usual inspections were carried out by the Quarter Master General to the Forces, the Director of Movements and Quartering, and the Assistant Director of Transportation. Among the railway directors and officers who visited Longmoor during the training of the units found by their respective railway companies were: Lt.-Col. Gilbert Szlumper (Southern Railway); Lt.-Col. Raymond Carpmael (Great Western Railway); Sir William Gray, Bart. (London & North Eastern Railway) and Brig.-Gen. Sir Harold Hartley (London Midland & Scottish Railway).

The weather deteriorated as the summer passed, but only the sports of the L.M.S. companies had to be cancelled. The others were most successful social events.

Sickness, other than the usual minor injuries, was almost absent, and all ranks left Longmoor looking fit and happy after their fortnight under canvas.



Map of the Woolmer Instructional Military Railway

THE RAILWAY SITUATION IN POLAND.—A report on economic conditions in Poland, published by the Department of Overseas Trade, records a decline of 14·2 million in the number of passengers carried by the railways in 1933 as compared with 1932. A considerable number of services, however, had been cancelled for reasons of economy. Goods traffic on the State lines totalled 46·6 million tons against 48·7 million in the preceding year. The 1933 budget estimated a profit of 50 million zlotys for the whole year, but a deficit of 32,808,000 zlotys appeared in the results for the first ten months. In addition to the 2,381 km. of narrow gauge railway operated by the State, various sub-standard systems are still in the hands of private companies, the most important, apart from those in and around Warsaw, being at Torun (six companies), Kracow (four companies), Lwow (seven companies), and Stanislawow (four companies).

RAILWAYS IN ANGOLA.—The total mileage of the three public railway systems in Angola is given as nearly 1,500 in a report on economic conditions in that country issued by the Department of Overseas Trade. The longest of these is the 3 ft. 6 in. gauge, Benguela Railway (837 miles), which runs from the Belgian Congo frontier to Lobito and provides the shortest sea and land route between Europe and the Katanga copper region. Results have so far fallen short of expectations, but the line is developing the central plateau of Angola and the maize export through Lobito, so that increased traffic may eventually be looked for. Freight has been similarly slow in materialising on the 400-mile long government-owned Loanda Railway, of metre gauge, which also serves a district of apparently high productive potentialities. The third public system in the country is the Mossamedes Railway (0·60 metre gauge), which is 154 miles in length.

Important Paris Metro Extensions

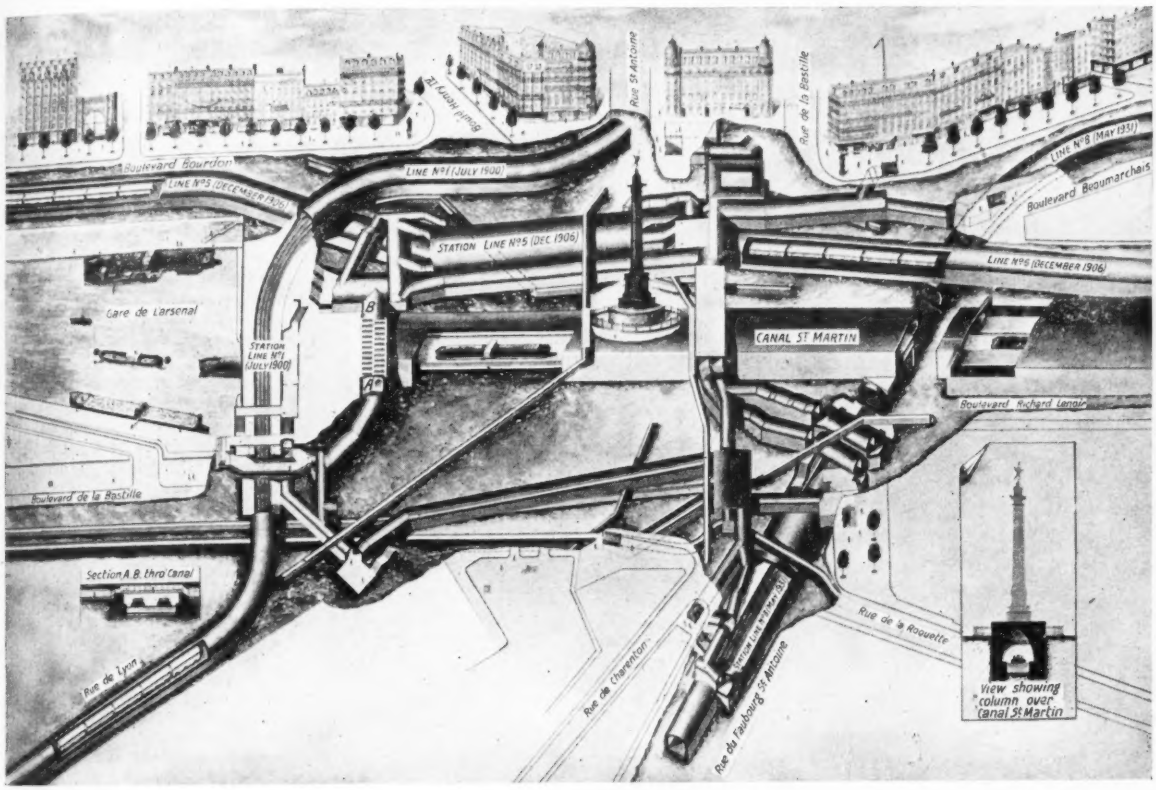
(From our French correspondent)

Operating results of the three short extensions of the Paris Metro lines into the suburbs are considered very satisfactory.* The number of tickets sold on the entire Metro system in July was 61,890,623. Of this total 2,760,825 tickets were sold on the suburban extensions, although these short lines have a total length of only 3¾ miles, compared with about 86½ miles for the whole system. Some critics of these figures point out that the number of suburban tickets does not really represent a gross increase in the number of Metro passengers, because many were accustomed to take their tickets at the gates of Paris before the suburban extensions were made. But comparison of the number of Metro passengers in July with the total for the same month last year shows an increase of 1,613,397 passengers. This result is held to justify the policy of extending the lines into the suburbs.

In connection with the Paris public works programme, which aims at extending employment, three other Metro suburban extensions are now being begun or are already in progress. These comprise the extension of line No. 1 from the Porte Maillot to the Pont de Neuilly, which is now well under way; line No. 3 from the Porte Champerret to the Pont de Levallois; and the line No. 9 toward the Mairie de Montreuil. Nine other suburban extensions are under consideration by the departmental council and the most urgent of these will be undertaken shortly with the aid of loans from the social insurance funds. One of the first is likely to be the section from the Porte de Pantin to the Eglise de Pantin, and this would naturally be carried out simultaneously with the construction of the line from the Gare du Nord to the Porte de Pantin, which itself is an extension inside Paris of the line from the Place de l'Italie to the Gare du Nord. Among other Metro plans is one for a line to connect

* The extension from Porte de Saint-Cloud to Pont de Sèvres was opened on February 3 this year; and those from Porte de Vincennes to Chateau de Vincennes and from Porte de Versailles to Mairie d'Issy on March 24.

Sketch map of the Paris Metro system showing sections under construction and proposed


Boulevard Bourdon
LINE No 1 (JULY 1900)
LINE No 5 (DECEMBER 1906)
STATION LINE No 5 (DEC 1906)
Gare de Larsenal
STATION LINE No 1 (JULY 1900)
CANAL ST MARTIN
LINE No 8 (MAY 1931)
Boulevard Beaumarchais
LINE No 6 (DECEMBER 1906)
Boulevard Richard Lenoir
Boulevard de la Bastille
Section A B thro' Canal
Rue de Lyon
Rue de Charenton
Rue du Faubourg St Antoine
Rue de la Roquette
View showing column over canal St Martin

Arrangement of the Metro lines under the Place de la Bastille showing the dates on which the various tracks and stations were opened

the Porte d'Orleans with the Porte d'Italie.

Much new constructional work on Metro lines inside the city boundaries is now in progress or about to be undertaken in connection with the public works plan. Line 10, which runs from Les Invalides to the Place Jussieu, is being extended a short distance to give access to the Gare d'Austerlitz of the Paris-Orleans Railway. This forms part of a plan to connect the Gare d'Austerlitz with Auteuil. To effect this, the station Duroc on the Invalides line will be linked with the station La Motte-Piquet and then the line to Auteuil will follow the direction of the existing line No. 8. The link is already well on the way to completion.

A new line No. 14 will be constructed to connect Les Invalides with the new station at Montparnasse, which is to become the principal long-distance terminus of the State Railways. From Montparnasse line No. 14 will continue to the Porte de Vanves, this section being now under construction. A branch from line No. 8 is to connect the station Commerce with the Porte de Sèvres.

Extensive Financial Arrangements

For the financing of the underground constructional work, the City of Paris will provide a sum of 230,000,000 francs, this including 89 millions for the Duroc-La Motte-Piquet link. The Department of the Seine provides 970 millions, making a total of 1,200 millions immediately available for the Metro lines. Work on the new schemes will be in full swing in October and about 7,500 men will find employment. With raw materials obtainable at a cheaper rate than formerly, it is expected that the requisite capital funds can be raised at 5·35 per cent., which is a lower rate than has hitherto been required for similar public works. The budget of the City of Paris will benefit by the works, as it is estimated that 30 per cent. of the expenditure involved by the schemes will return to the municipal exchequer in the form of taxes and reduction of the expenses of unemployment relief.

Railway Shopmen's Wages. — Another meeting of the National Railway Shopmen's Council, which is composed of representatives of the trade unions and the railway companies' sides, has been arranged to take place to-day (Friday), to consider the application by the trade unions for a discontinuance of the four-and-one-sixth per cent. deduction from the earnings of railway shopmen which has been in operation —by agreement—since March, 1931.

The Institute of Metals.—This institute and its local sections have planned a very full programme for the coming session. There will be three general meetings of the institute, in March, May, and September respectively. At the May meeting Prof. W. R. Bragg, F.R.S., will deliver the 25th annual May lecture. The annual autumn meeting will be held in Newcastle-on-Tyne. In addition to the meetings of the parent organisation monthly meetings will be held at the six local sections, namely, Birmingham, Glasgow, London, Newcastle-on-Tyne, Sheffield, and Swansea. The programmes of each section are designed primarily to appeal to persons engaged in the local industries; thus papers will be read in Birmingham on the production of brass ingots and on the rare metals—gold, silver, and platinum.

Netherlands Railways Traffic. —Provisional figures of traffic on the Netherlands Railways for the first eleven months of 1933 are quoted in a report on economic conditions in Holland recently issued by the Department of Overseas Trade. The total receipts to the end of November were 111 million florins, of which 48·9 millions were for goods traffic, and it is estimated that even allowing for increases due to the severe weather in December, the final result can hardly exceed 125 million florins, or 15 millions less than in 1932

Railway Developments in Manchukuo

Purchase from the Soviet of the Chinese Eastern Railway—Scheme of collaboration with the rural population by the Manchukuo State Railways

(From our special correspondent)

It has been officially announced in Tokyo that the Soviet authorities have accepted the sum of 170,000,000 yen (approximately £10,000,000 at the current rate of exchange) as the price of the sale to the Manchukuo authorities of the Chinese Eastern Railway, now known locally as the North Manchurian Railway. Negotiations have been in progress since May, 1933, with the Japanese Government acting as intermediary, but these broke down on August 13 last by reason of the apparent impossibility of reaching a satisfactory compromise between the original Soviet offer of about £25,000,000 and the counter Manchukuo offer of £5,000,000. Since the official negotiations broke down, however, informal conversations have been in progress between the Japanese Foreign Minister and the Soviet Ambassador in Tokyo, and these conversations have resulted in the present "informal compromise," which now requires only formal approval and elaboration of detail. The figure of 120,000,000 yen is understood to include some 30,000,000 yen as compensation for the Soviet employees of the Chinese Eastern Railway who will be discharged. [A leading article on page 497 discusses the C.E.R.]

Railways of Manchukuo

The State Railways are one of the three Manchukuo railway systems, the other two being the privately owned South Manchurian Railway Company (S.M.R.) and North Manchurian Railway (N.M.R.), formerly the Chinese Eastern Railway. To-day the State Railways system has 3,702 km. of line in operation and several hundreds of miles under construction. The working of these lines is entrusted to the S.M.R. under the control of the Directorate of the Manchukuo Railways, officially known as the State Railway Bureau.

The history of railway development in China and old Manchuria shows that in the early peaceful times the construction of railways was warmly welcomed by the country people. It was, in fact, surprising to what extent the Chinese and Manchu population, even in the poorest districts, used the lines for travel and transport of goods.

The Years of Civil War and Chaos

But when, during the past two decades, chaotic conditions gradually spread, and railways became instruments of civil war in the hands of the military, the attitude of the country people changed into indifference and hostility. The villagers soon discovered that as railway lines fell into the hands of the war lords, their usefulness to civilians for travel and transport diminished and even ceased for long periods. The insecurity of the villages in the railway zones increased, their population being the first to suffer requisitions, unlawful seizure of men and goods, war taxation and oppression generally under the rule of war lords.

Even in times of comparative peace between the civil wars, the railways proved of very little use. The staff of well-trained railwaymen under efficient administrations had been replaced by amateurs, friends of the ruling authorities, who each and all ran the railway as they liked and levied sur- and super- and super-sur-taxes.

When soldiers left, bandits flocked towards the railway and again the villages became the first victims. There is little cause for wonder, therefore, that the population felt hostile to the railway, a state of mind which is far from easily healed in these parts.

The New Era

When peace returned in the new State of Manchukuo, the railway directors realised the necessity of convincing the population that the railways were there to serve them. With the consent of provincial governors and district magistrates they established official means of collaboration between the railway staff and the population, the railway administration offering assistance to the villagers in various ways in return for the population's goodwill, which ultimately would result both in bringing customers to the railway and in security against sabotage.

All villages within a zone of three miles on each side of the railway are divided in units, one large village or several small hamlets constituting such a unit. A village chief or station master is appointed leader or correspondent of a unit, and through these correspondents the railway administration keeps in permanent touch with the population.

The first step taken was to make clear to the population that the railway was there to serve them. Lectures were arranged and pamphlets distributed, to show what services the

Sketch map of the railways of Manchukuo. The Chinese Eastern Railway is the portion of 5-ft. gauge track in Manchukuo

railway could give for purposes of travel, transport and telegraphic communications. These lectures also pointed out the necessity of leaving the railways alone and of not considering its nuts and bolts, rails and sleepers as public property, and they also encouraged villagers to help in preventing thefts of these materials and also the putting of rocks on the track, demolishing of fences and cutting of embankments. In fact, they urged these measures in order to make the service of the railway as efficient as the villagers would wish it to be. A second step was the arrangement of a prompt warning when bandit attacks were expected.

Railways as Fairy Godmother

These steps were followed by the distribution of proper seeds, of pigs, sheep, and fowls for breeding purposes, given free by the railway to villages which were in need of them. At regular intervals special trains were run, carrying a doctor, who gave free treatment to suffering villagers, and publicity-agents who entertained the villages to cinema shows. Other activities consisted in the organisation of sports meetings along the line.

The railway administration is, moreover, ready to give advice on all sorts of subjects on which the villages want help, for example, building a road, planting trees, establishing a school, or any other matter. In addition, prizes are awarded to villages that show specially good results with the new seeds or cattle distributed, and scholarships have been given to particularly bright youths, and employment on the railway to smart men.

As a result of this far-sighted policy the railways now work smoothly and the directors assure me that, instead of troubles from bandit attacks, petty thefts and sabotage, they now receive support and assistance from the population along their lines.

The railways have spent considerable sums on this system—£5,000 in one year alone on the seeds and animals distributed free—but the revenues are increasing by leaps and bounds and the expenses for the protection of railway property are said to be decreasing month by month.

THE BELGIAN VICINAUX IN 1933.—Largely as a result of superseding steam traction by railcars on lines not showing a profit, and also by judicious electrification, the Soc. Nationale des C. de fer Vicinaux Belges suffered a decrease of only 2·85 per cent. in revenue for 1933 compared with the figure for 1932. The total receipts for the year amounted to 236,950,914 Belg. fr., and the working expenditure to 235,633,145 Belg. fr. Of the total length open to traffic of 4,720 km., 1,227 km. were worked electrically, and these lines showed an operating ratio of 94, compared with 109 for the steam-worked lines, and 99·4 for the whole system. The length of road services operated was 436 km.

Inspection of Tees Conservancy

Speech by L.N.E.R. Chairman

Mr. William Whitelaw, Chairman of the L.N.E.R., and members of the board with chief officers of the company, were the guests of the Tees Conservancy Commission on Tuesday on a tour of inspection of the river Tees between Middlesbrough and the sea. The journey was made on the commissioners' steam tug, *Sir Hugh Bell*, and the party was able to see the numerous industrial enterprises on the Durham and Yorkshire banks of the river. The great chemical works of Imperial Chemical Industries Limited, at Billingham-on-Tees, the iron and steel works, shipyards and engineering works, made a very impressive panorama. The principal object of interest was the important reclamation enterprise at the Seal Sands, which the commissioners have been engaged upon for two years. They are in process of reclaiming 267 acres of tidal foreshore, which will ultimately be available for industrial development.

Alderman T. Gibson Poole presided at luncheon, and in welcoming the visitors observed that a vast proportion of the public based its judgment upon scant data and was liable to indulge in unjustifiable criticism. "We know," he said, "that much that has been called lack of enterprise has been attributable to lack of statutory powers."

Mr. William Whitelaw, acknowledging the hospitality of the commissioners, expressed the pleasure of the directors and officers of the company at the opportunity afforded them of seeing something of the immense works which the Commission was carrying out on the river. "You have given us some inspiration, I hope, to go along with something of the same policy," he observed.

Mention had been made of the serious problems which faced the railway company. "There is one railway problem which to my mind is never quite sufficiently appreciated by the public," said Mr. Whitelaw. "People have got into the habit of imagining that so long as they can get a suitable train, or have their goods carried at a reasonable rate, it does not matter whether the shareholder gets a return or not. Let me tell you quite seriously that the adoption of new enterprises must inevitably depend upon the condition of prosperity or otherwise in which the shareholder stands. We in our present position are, frankly, incapable of entering upon enterprises of something like a speculative nature; we cannot and we will not attempt it. On the contrary, we insist, and we think we are right in insisting, on seeing something like a reasonable guarantee on the expenditure we make. That is simply because of the financial position which denies a dividend to many thousands of our shareholders, to those who hold some of what used to be called trustee stocks."

Alluding to the recent wages negotiations with the railway trade unions, Mr. Whitelaw said it was the point of view of the unions to get all they could. "I wonder sometimes if they realise that almost inevitably without some vast improvement in the business and trade of the country, that can only lead ultimately to less employment. If we have no money to found new enterprises, our trade cannot flourish. What we have seen today gives us, perhaps, some reason to think that we might be able, like yourselves, to do a little more. But it does remain a fact that the people of this country, whatever class they belong to, cannot expect railway enterprise from railways which cannot enjoy prosperity, and that should be widely appreciated. We know our responsibilities, and we do not for a moment, when we seek the sympathy of the public for the shareholders, deny our responsibilities to the public."

Sir Murrough J. Wilson, Deputy Chairman of the L.N.E.R., proposing the Tees Conservancy Commission, expressed admiration of the enterprise displayed by the commissioners despite the prolonged period of bad trade which they had experienced.

In his reply, Alderman B. O. Davies, Chairman of the Works Committee of the Tees Conservancy Commission, said the river today was in better condition than ever. When the reclamation was completed, there would be added 267 acres with the utmost potentialities for trade development. Alderman Davies congratulated the L.N.E.R. upon the quality of the officers of the company in the Tees-side area.

The railway party included the Chairman, Mr. William Whitelaw; the Deputy Chairman, Sir Murrough J. Wilson; Sir Charles A. Batho, the Rt. Hon. Lord Burghley, Major W. H. Carver, Mr. Alexander R. Gray, Sir William Gray, Lt.-Col. the Hon. A. C. Murray, and Sir Christopher T. Needham (directors); Sir Ralph Wedgwood, Chief General Manager; Mr. James McLaren, Secretary; and the following officials of the N.E. Area:—Mr. Thomas Hornsby, Divisional General Manager; Mr. S. T. Burgoyne, Passenger Manager; Mr. C. M. Jenkin Jones, Divisional Superintendent; Mr. Paul Gibb, Divisional Goods Manager; Mr. J. Miller, Engineer; and Mr. A. Tulip, Chief Engineer for Docks; Mr. W. E. Blakey, District Goods Manager, Middlesbrough; Mr. T. B. Hare, District Superintendent, Darlington; and Mr. C. M. Stedman, Locomotive Running Superintendent.

Mr. Frederick T. Nattrass, General Manager of the Tees Conservancy Commission, and Mr. Percival A. R. Leith, Chief Engineer, conducted the party on the tour.

European Railway Speeds

Since the preparation of the statistics on which was based the survey of European train services which appeared in the August 31 issue of THE RAILWAY GAZETTE, certain slight modifications have been made of the train services of the Nord and P.L.M. Railways, to which our attention has been drawn by Monsieur Léon Pondeveaux. In the first place, the 3-car diesel-operated train of the Nord, which runs daily from Tergnier, Lille and Arras to Paris and back, instead of calling at Longueau to make connection to and from Amiens, has been diverted via Amiens. This procedure requires reversal in Amiens station, but 3 min. suffices in the timetable for the purpose, as no running of the engine round the train is needed, and acceleration of the running permits the same times as before to be observed at Arras and beyond. The train is now, therefore, allowed 77 min. in each direction for the 81·1 miles between Paris and Amiens (= 63·2 m.p.h. start-to-stop), 40 min. for the 42·1 miles from Arras to Amiens (=63·2 m.p.h.), and 41 min. in the reverse direction (= 61·6 m.p.h.). These runs require to be substituted, therefore, for those shown in the table between Paris and Longueau, and Longueau and Arras respectively. By an oversight, the run of the night Swiss express from Boulogne, as between Etaples and Laon, was omitted from the table; this train leaves Etaples at 18.21, and covers the 126.4 m.p.h. to Laon non-stop in 129 min., at an average of exactly 58 m.p.h. start-to-stop. Other slight errors were that the distance between Paris and Longueau was shown as 78·6 miles, instead of the correct figure of 78·2 miles, and the speed of the runs timed over this section in 77 min. therefore comes down from 61·2 to 60·9 m.p.h. Similarly the speed of the 8.15 train from Paris to Arras should have been shown as 61·8 instead of 62·2 m.p.h., and of the 14.15 from Paris to St. Quentin as 63·4 instead of 63·9 m.p.h.

On the P.L.M. Railway considerable modifications have been made in the timings of the Bugatti railcar services. The Paris-Lyons service, though appearing in the timetables, was not actually put into operation during the currency of the summer timetables, and the runs of this car must therefore be excised from the table. It is expected to come into service during October, when the Paris-Vichy service will be withdrawn, but on a schedule modified from that originally proposed. Similarly, the working of the Paris-Vichy-Clermont Ferrand car was entirely altered from that first scheduled; instead of leaving Paris at 8.5 in the morning, it left Clermont Ferrand at 7.50 and Vichy at 8.35, reaching Paris at 12.33 midday; and returning from Paris at 15.20, it was due in Vichy at 19.19 and Clermont Ferrand at 20.05. Further, the 74 min. timing from Nevers to Montargis (which includes a momentary stop, for working purposes, at Cosne) was increased to 80 min. for the 84·4 miles, reducing the speed from 68·4 to 63·3 m.p.h., and the 70-min. run from Paris to Montargis was increased to 76 min. (63·9 to 58·1 m.p.h.), while the run from St. Germain-des-Fossés to Moulins, Riom to Vichy, and Montargis to Paris were slowed below the 58 m.p.h. level. But from Montargis to Nevers (again including the Cosne stop) the time was cut from 85 to 80 min., speed thereby rising from 59·6 to 63·3 m.p.h.; and the speed of the Nevers-Moulins run has also been raised from 58·9 to 60·4 m.p.h. by cutting a minute from the previous 38-min. schedule. In this connection it should be noted that the symbol " ‖ " used in the table of French runs should have been explained as " railcar services," and not specifically " diesel railcar services."

Other modifications affect the table of high-speed German runs given in our issue of June 1 last. By a timetable error, the 23.28 night train from Munich to Nuremberg was shown as taking 122 min. for the 123·2 miles, but the actual time now turns out to be 132 min., and this run therefore falls below the 58 m.p.h. level. Similarly, the evening service from Berlin to Wittenberg starts at 22.16 and not 22.18, making 62 min. for the 58·9 miles, and so also cutting this run out. On the other hand, owing to certain trains being allowed standing time at stations which does not figure in the public timetables, the 12.59 from Lehrte to Gardelegan is allowed 61 instead of 62 min. for 63·2 miles; the 19.05 35 min. instead of 37 min. for the 36·7 miles from Spandau to Rathenow; the 9.10 train 37 instead of 38 min. for the same distance; and the 9.53 from Berlin to Jüterbog 39 instead of 39·1 min. for this 39·1 miles. An additional run was from Spandau to Rathenow at 14.53 in 38 min. In this way the aggregate German mileage booked at 62 m.p.h. and over is increased to 2,009 miles (16 runs), but the totals at 60 and 58 m.p.h. and over respectively fall to 2,836 and 5,192 miles.

High-season timetable changes in Belgium resulted in some further additions to the fast runs made during the summer on the Brussels-Ostend main line. The additions included the 18.13 from Brussels (Midi) to Bruges, covering the 59·9 miles in 58 min. (at 62·0 m.p.h.), and the 8.32 from Bruges, making the same run in the reverse direction in the same time. There was also the 10.20 in the morning from Ostend (Quai) to Brussels (Midi), covering the 73·1 miles in 74 min., at 59·2 m.p.h. In all, 5 trains (instead of 6) made the 26·5-mile run from Ghent to Bruges in 26 min., 9 (instead of 6) the 33·4-mile run from Ghent to Brussels (Midi) in 33 min., and 10 (instead of 9) the last-mentioned run reversed in 34 min., while there was an additional 58 m.p.h. service afforded by the 9.54 from Ghent to Bruges, 26·5 miles in 27 min., at 58·9 m.p.h. This made a total of 120 miles at 62 m.p.h., 553 miles (16 runs) at 60 m.p.h. and over, and 1,019 miles (31 runs) at 58 m.p.h. and over—a most creditable showing for this small country.

The results of these variations are set out in the amended table of aggregate mileages reproduced below. The total French mileage at 58 m.p.h. dwindles to 9,745 miles. The British total is increased by reason of an error in the previous table, which credited the L.M.S.R. with only 2,209 miles booked at 58 m.p.h. and over, whereas the actual figure is 2,348 miles. This brings the British aggregate at 58 m.p.h. and over to 5,537 miles, which compares with 5,192 miles in Germany, though still, of course, far below the French totals.

AGGREGATE MILEAGE OF EUROPEAN RAILWAY RUNS BOOKED DAILY AT 58 M.P.H. AND OVER

Country and Railway	66 m.p.h. and over	64 m.p.h. and over	62 m.p.h. and over	60 m.p.h. and over	58 m.p.h. and over
Great Britain	miles	miles	miles	miles	miles
Great Western	77 (1)	77 (1)	355 (4)	1,287 (13)	2,578 (25)
L.M.S. (Western Division)	—	153 (1)	286 (2)	952 (7)	1,928 (17)
,, (Midland Division)	—	—	—	—	420 (14)
L.N.E. (G.N. Section)	—	—	106 (1)	260 (4)	260 (4)
,, (N.E. Area)	—	—	—	88 (2)	178 (5)
,, (G.C. Section)	—	—	—	23 (1)	141 (6)
G.W.R. Total	77 (1)	77 (1)	355 (4)	1,287 (13)	2,578 (25)
L.M.S.R. ,,	—	153 (1)	286 (2)	952 (7)	2,348 (31)
L.N.E.R. ,,	—	—	106 (1)	371 (7)	579 (15)
G.N.R. (Ireland)	—	—	—	—	32 (1)
France					
Nord	—	391 (3)	1,561 (13)	3,549 (35)	5,423 (55)
Paris-Orleans-Midi	140 (2)	209 (3)	272 (4)	711 (12)	1,644 (29)
Etat	545 (4)	545 (4)	718 (6)	718 (6)	860 (19)
Est	—	—	—	219 (1)	769 (7)
Alsace-Lorraine	135 (2)	135 (2)	326 (4)	419 (5)	649 (10)
P.L.M.	—	—	169 (2)	243 (4)	546 (8)
French Totals	820 (8)	1,280 (12)	3,046 (29)	5,859 (63)	9,891 (128)
British ,,	77 (1)	230 (2)	747 (7)	2,610 (27)	5,537 (72)
German ,,	712 (4)	1,641 (12)	2,009 (16)	2,836 (27)	5,192 (64)
Belgian ,,	—	—	120 (2)	553 (16)	1,019 (31)
Italian ,,	—	—	—	101 (2)	287 (4)
European Totals	1,609 (13)	3,151 (26)	5,922 (54)	11,959 (135)	21,926 (299)

Figures in brackets in each column indicate the number of runs making up each aggregate mileage figure.

NOTES AND NEWS

R.O.D. Reunion Dinner, 1934.—Mr. R. M. T. Richards informs us that arrangements have been made for the Reunion Dinner to be held at the Trocadero Restaurant, London, on Friday, November 23.

Railway Students' Association.—The Presidential Address of this Association will be delivered by Sir William Beveridge, K.C.B., at the London School of Economics on October 18. The subject of the address, which will begin at 6 p.m., is "Civil Service Matters in Business."

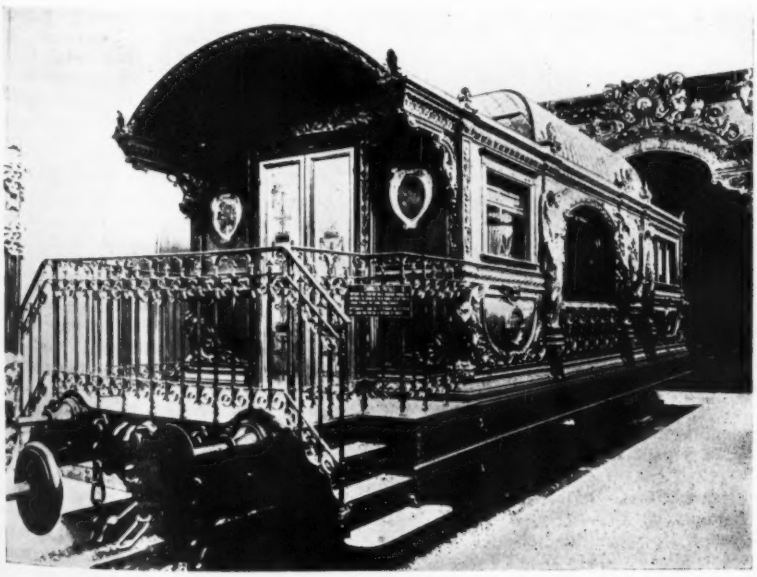
Mildmay Park Station to be Closed.—The L.M.S.R. station at Mildmay Park is to be closed as from October 1. The station is midway between Dalston Junction and Canonbury stations, which are only a mile apart, and has not been used by electric trains.

P.L.M. Bugatti Railcar Service.—The Bugatti railcar which has been working on the P.L.M. between Paris and Vichy and Clermont-Ferrand, made its last regular trip from Paris on September 15 and from Clermont-Ferrand on September 17, though two additional week-end trips were scheduled from Paris on September 22 and 29, returning on September 24 and October 1, respectively, and for these two last trips the usual supplement of 20 francs (irrespective of distance travelled) was not to be charged. The car has been working since July 9, at 15.20 from Paris and 7.50 from Clermont-Ferrand, instead of starting out at 8.0 from the Paris end (as originally shown in the French summer timetables), as the morning working from the Clermont-Ferrand end is much more suitable for the traffic.

Dover, St. Margarets & Martin Mill Light Railways.—The Minister of Transport has further extended until October 11, 1935, the period limited for the completion of the whole of the railway authorised by the Dover, St. Margarets & Martin Mill Light Railways Order, 1909.

Tilling Traction Bonus.—At the extraordinary general meeting of shareholders of Tilling & British Automobile Traction Limited, held on September 20, resolutions were passed in favour of capitalising part of the reserve by the issue of bonus shares to ordinary holders in the proportion of one for every four held.

The Vatican Railway.—Cardinal Pacelli, the Papal Secretary of State and Legate, left the Vatican City by rail on Monday *en route* for Buenos Aires for the Eucharistic Congress. He thus inaugurated the Vatican Railway, which was briefly described and illustrated in our issue of last week. In view of this, we reproduce below a photograph of the former Papal private saloon, built in 1857 at a cost of £5,500. Various distinguished artists were employed in its decoration. The external features are distinctly religious in type, and almost suggestive of a funeral car. The body is overlaid with plastic material, silvered and gilt. The three figures in relief represent Faith, Hope, and Charity. The open platform in the centre leads from the vestibule and reception saloon to the private apartments, which comprise an oratory, or chapel, with a portable altar, reading-room, and toilet apartment. The internal decorations include almost priceless paintings and frescoes, the upholstery is chiefly in white velvet, and the general fittings are of a most ornate description. A special train was presented to Pope Pius IX in 1857; the private saloon was the gift of the Rome-Civitavecchia Railway, and two other coaches were provided by officials of the Rome Railway. When the Pope lost his temporal power in 1870 the special train fell into disuse. After being overhauled in the shops of the Italian State Railways, it was exhibited at the festival to commemorate the Jubilee of Italian unity at the Castle of S. Angelo, in Rome, in 1911.



Old Papal saloon presented to Pius IX in 1857

Argentine Railway Wages.—A Reuters message states that the wages dispute on the Argentine Railways has been solved following the Government's threat to dictate a settlement last week. Both the railway companies and the unions have agreed to Government mediation. The railway companies were desirous of investigating alternatives to wage reductions and also of continuing the present reductions. This the unions refused to agree to, declaring such steps to be unnecessary owing to an increase in traffic receipts on the railways. Last week the Government threatened to enforce a settlement following the refusal of either side to agree to arbitration.

Traffic Working in the Eastern Section, Southern Area, L.N.E.R.—In a lecture attended by 400 members of the Nottingham L.N.E.R. (G.C. Section) Debating Society, on Saturday last, Mr. R. Gardiner, Assistant Superintendent, Eastern Section, Southern Area, L.N.E.R., described the intricacies of train working on the former Great Eastern Railway, contrasted it with the North Eastern and Scottish areas and mentioned recent innovations which facilitated working, such as train describers, colour light signals, and electrical point operation. He also mentioned the principal classes of traffic carried, described the new glass-lined road-rail milk tanks, and gave very interesting figures regarding passenger traffic at Liverpool Street station, notably that during the evening peak hour 108 trains are dealt with and more than 2,000 manual signal movements in the East and West signalboxes are made.

Jugoslavian Railway Works.—A summary of railway works put in hand or completed during 1933 appears in a report on economic conditions in Jugoslavia, dated June, 1934, issued by the Department of Overseas Trade. Twenty-two kilometres between Velika Plana and Lapova on the Belgrade-Nisch main line were doubled and construction was started on railways from Pristina to Pec (82 km.); Belgrade to Pancevo, over the new Pancevo bridge (26 km.); and Klenak to Sabac over the Sava bridge (5 km.). The Pancevo bridge will eventually provide

a new and shorter route into Roumania. When the report was issued the bridge was nearing completion and permits were being issued to foot passengers to cross it.

Corsica's One Day Railway Strike.—A Press message states that Corsican railwaymen declared a 24-hour strike as a protest against the 5 per cent. cut in their wages, and that on Monday no trains were running. The mails were carried in motor coaches, and the strike passed off without incident. A similar 24-hour strike took place a week or two ago.

L.N.E.R. Camping Coaches.—The arrangement by the L.N.E.R. of camping coaches has proved so popular during the summer months that it has been decided to keep the camping coaches open until the end of October for bookings at the reduced figure of £2 a week. Full equipment is provided, including bedding, sheets, cutlery, and kitchen utensils, at 35 selected sites.

Model Railway Display for Hospital.—The Ken View model railway, at the corner of Bishops Avenue and Deansway, East Finchley, will be open for inspection by the public this Saturday, September 29. The opening will be performed at 3.30 p.m. by Mr. Christopher Stone. Admission will be free, but contributions will be accepted in aid of the Finchley Memorial Hospital.

Air and Road Competition with U.S.A. Railways.—In our editorial article on this subject (THE RAILWAY GAZETTE, September 14, page 421) we referred to a run by the *Burlington Zephyr* over the 1,015 miles from Omaha to Chicago in 13 hr. 5 min. The distance from Omaha to Chicago is only about 400 miles, and Denver should be read for Omaha.

Railway Air Services Winter Plans.—The passenger, mail, and freight service operated by Railway Air Services Limited on behalf of the L.M.S.R. between London, Belfast and Glasgow, and vice versa is to be continued until further notice. On its inauguration on August 20 it was announced that the service would operate until September 29. In the case of the northbound service from London to Belfast and Glasgow, the schedule is being amended as from October 1 to give a morning departure from London instead of in the afternoon, the new schedule being :—

London (Croydon)	...	dep.	9.45 a.m.
Birmingham (Castle Bromwich)	...	arr.	10.40 a.m.
,, ,,		dep.	10.50 a.m.
Manchester (Barton)	...	arr.	11.30 a.m.
,, ,,	...	dep.	11.50 a.m.
Belfast (Aldergrove)	...	arr.	1.30 p.m.
,, ,,	...	dep.	1.50 p.m.
Glasgow (Renfrew)	...	arr.	2.45 p.m.

Road connections will be given at appropriate times from and to central points in the cities served.

Railway Air Services also announces that the Liverpool–Birmingham–Plymouth and Birmingham–Cowes services will terminate for the season at the end of September. The London–Cowes service operated on behalf of the Southern Railway will, however, continue until further notice, and will call additionally at Southampton. Connections will be made in both directions at Croydon with the London–Belfast–Glasgow service.

The Last of the Air Excursions.—The last of the air excursions this summer from Liverpool, Birmingham, and Cardiff was run by Railway Air Services Limited on Wednesday last, September 26. They were from Liverpool to Birmingham, 30s. ; Birmingham to Cardiff, 30s. ; Cardiff to Teignmouth, 30s. ; and Birmingham to Cowes (I.O.W.), 45s. Passengers travelled by the first service on the forward journey and returned by the last. The policy of running air excursions at cheap rates for return the same day has proved very successful, and has definitely contributed towards making the public air-minded in this country.

More Southern " Schools " Class Engines.—Ten more " Schools " class three-cylinder express locomotives are being built at the Southern Railway works at Eastleigh. The Southern Railway has already 30 locomotives of this class in regular use, and the success achieved by these has resulted in the decision to build more. As in the case of those already built, the new engines will be named after famous public schools, and the numbers and names selected are as follow :—930, *Radley ;* 931, *Kings—Wimbledon ;* 932, *Blundells;* 933, *Kings—Canterbury ;* 934, *St. Lawrence ;* 935, *Sevenoaks ;* 936, *Cranleigh ;* 937, *Epsom ;* 938, *St. Olave's ;* and 939, *Leatherhead.*

The Week's Road Accidents.—The Secretary to the Ministry of Transport has issued the following return for the week ended September 22 of persons killed or injured in road accidents ; the comparable figures for the week ended September 15 are shown in brackets :—

	Killed in accidents reported during the week	Reported during the week as having died as the result of accidents occurring in previous weeks	Injured in accidents reported during the week
	No.	No.	No.
England	116 (114)	27 (28)	4,365 (4,852)
Wales ...	1 (3)	1 (—)	186 (216)
Scotland	113 (9)	3 (5)	489 (487)
	130 (126)	31 (33)	5,040 (5,555)

The total fatalities of the week, as the result of road accidents, were, therefore, 161, as compared with 159 for the previous week and 160 for the week ended September 8.

Educational Scheme for L.N.E.R. Clerical Staff.—The L.N.E.R. has decided to continue the educational scheme for its clerical staff during the coming 1934-35 session. The interest taken in both university courses and railway classes continues to be maintained and, in addition to arrangements on similar lines to last year for the forthcoming session, a course of correspondence classes in train signalling is to be instituted as an experiment for the benefit of those members of the staff in isolated areas who are unable to attend the recognised centres of instruction.

Typhoon Damage in Japan.—Serious disruption of services between Tokyo, Osaka and Shimonoseki resulted from the typhoon which swept Japan on September 25. Ten trains are reported to have been overturned and derailed, including the Tokyo-Shimonoseki express, which was blown over when crossing a bridge, but saved by the parapet from falling into the river.

Canadian National Earnings.—For the month of August, 1934, gross earnings of the Canadian National Railways amounted to $13,532,418, an increase of $155,662 in comparison with August, 1933. Operating expenses ($13,467,142) at the same time advanced by $1,097,417, leaving net earnings $941,755 lower, at $62,275. Aggregate gross earnings from January 1 to August 31, 1934, were $107,022,440, an improvement of $12,888,217 on the first eight months of 1933, and there were net earnings of $5,132,261, contrasting with a deficit of $1,151,485 for the first eight months of 1933.

Rail Tickets in Germany.—Attention is drawn in a letter to *The Times* from Mr. David Gourlay, Managing Director, the Wayfarers' Travel Agency Limited, that, in view of the fact that rail tickets on the German railway system may, until October 31, be purchased at 60 per cent. reduction (provided at least seven days are spent within the Reich) and that these tickets cannot be obtained in Germany, it is still cheaper to buy German rail tickets from English tourist agencies, at Rm. 12 to the pound, than to buy them in Germany with Registered Mark cheques at, say, Rm. 19 to the pound (a saving of only 50 per cent. approximately).

G.W.R. Ambulance Work, 1933-4.—Another successful year of ambulance work is recorded in the report of the Great Western Railway Ambulance Centre for the twelve months from July 1, 1933, to June 30, 1934. The first-aid examination results show that not only has there been an increase in the number of successful students, but that, notwithstanding the restriction on staff recruitment, there has also been an increase in recruits to the movement, no fewer than 515 new members having passed their first examination. The Athlone Bowl, awarded to the ambulance division gaining the highest proportion of new members to total examinees, has been won by the Swindon Division, with a percentage of 16·06. The series of first-aid competitions organised through-

out the line in the spring proved as popular as ever with the staff, and 292 teams (115 in the advanced class and 177 in the beginners' class) participated. At the final contest held at Paddington on April 27, the Directors' challenge shield was won by the South Lambeth team, while the Carvell Cup was awarded to the Pontypool Road team, as runners-up. The G.W.R. was represented by these two teams at the inter-railway competition of the St. John Ambulance Association at the Wharncliffe Rooms on May 15. For the second year in succession the company won the inter-railway challenge shield, the South Lambeth team attaining first place in that contest. At the Welsh inter-railway competition held at Cardiff on November 2, the Cardiff Newtown team won the Harry Webb Cup. The company are thus this year holders of the premier inter-railway trophies of England and Wales.

Medals for first-aid work during the year were awarded by the Chairman, Sir Robert Horne, K.B.E., K.C., M.B., on the occasion of the final competition. During the twelve months under review 385 long service awards have been issued, *i.e.*, 178 gold medals for 15 years' efficiency, 127 gold bars (20 years), 56 Quarter Century medals, and 24 bars for 30 years' efficiency. Since their institution no fewer than 2,717 efficiency awards have been issued to members of the staff, as under :—

15-year gold medals ..	1,580
20-year gold bars	795
25-year gold medals ..	280
30-year gold bars	62

This strong and vigorous movement is not maintained without much good work from its members, and it is gratifying to record that, on the recommendation of the Central Ambulance Committee, the Venerable Order of St. John of Jerusalem last year awarded the Vellum Vote of Thanks to nine members of the staff for valuable services, and elected eleven others as Serving Brothers of the Order. For services maintained over an exceptionally long period of years, another member was promoted from the grade of Serving Brother to that of Officer.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 38th Week			Totals to Date		
	1934	1933	Inc. or Dec.	1934	1933	Inc. or Dec.
	£	£	£	£	£	£
L.M.S.R. (6,941½ mls.)						
Passenger-train traffic...	510,000	500,000	+ 10,000	18,630,000	18,340,000	+ 290,000
Merchandise, &c. ...	457,000	438,000	+ 19,000	16,726,000	15,480,000	+1,246,000
Coal and coke ...	217,000	205,000	+ 12,000	8,465,000	8,071,000	+ 394,000
Goods-train traffic ...	674,000	643,000	+ 31,000	25,191,000	23,551,000	+1,640,000
Total receipts	1,184,000	1,143,000	+ 41,000	43,821,000	41,891,000	+1,930,000
L.N.E.R. (6,339 mls.)						
Passenger-train traffic...	335,000	322,000	+ 13,000	12,026,000	11,821,000	+ 205,000
Merchandise, &c. ...	318,000	318,000	—	11,586,000	10,710,000	+ 876,000
Coal and coke ...	232,000	211,000	+ 21,000	8,513,000	7,773,000	+ 740,000
Goods-train traffic ...	550,000	529,000	+ 21,000	20,099,000	18,483,000	+1,616,000
Total receipts	885,000	851,000	+ 34,000	32,125,000	30,304,000	+1,821,000
G.W.R. (3,750 mls.)						
Passenger train traffic...	225,000	220,000	+ 5,000	7,905,000	7,921,000	— 16,000
Merchandise, &c. ...	184,000	185,000	— 1,000	6,742,000	6,285,000	+ 457,000
Coal and coke ...	107,000	97,000	+ 10,000	3,738,000	3,658,000	+ 80,000
Goods-train traffic ...	291,000	282,000	+ 9,000	10,480,000	9,943,000	+ 537,000
Total receipts	516,000	502,000	+ 14,000	18,385,000	17,864,000	+ 521,000
S.R. (2,176 mls.)						
Passenger-train traffic...	317,000	308,000	+ 9,000	11,428,000	11,265,000	+ 163,000
Merchandise, &c. ...	69,000	67,000	+ 2,000	2,397,000	2,290,500	+ 106,500
Coal and coke ...	32,000	28,000	+ 4,000	1,168,000	1,099,500	+ 68,500
Goods-train traffic ...	101,000	95,000	+ 6,000	3,565,000	3,390,000	+ 175,000
Total receipts	418,000	403,000	+ 15,000	14,993,000	14,655,000	+ 338,000
Liverpool Overhead (6¼ mls.) ...	1,156	1,108	+ 48	43,902	43,388	+ 514
Mersey (4½ mls.) ...	3,913	3,862	+ 51	154,172	150,350	+ 3,822
*London Passenger Transport Board ...	533,900	524,800	+ 9,100	6,309,200	6,244,300	+ 64,900
IRELAND						
Belfast & C.D. (80 mls.) pass.	2,614	2,591	+ 23	100,711	102,583	— 1,872
" " goods	518	596	— 78	19,323	19,625	— 302
" " total	3,132	3,187	— 55	120,034	122,208	— 2,174
Great Northern (562 mls.) pass.	11,000	9,750	+ 1,250	388,500	293,700	+ 94,800
" " goods	9,500	9,550	— 50	314,500	240,900	+ 73,600
" " total	20,500	19,300	+ 1,200	703,000	534,600	+ 168,400
Great Southern (2,158 mls.) pass.	23,194	24,203	— 1,009	935,416	925,925	+ 9,491
" " goods	33,312	31,566	+ 1,746	1,208,636	1,131,750	+ 76,886
" " total	56,506	55,769	+ 737	2,144,052	2,057,675	+ 86,377

* 12th week, the receipts for which include those undertakings not absorbed by the L.P.T.B. in the corresponding period last year; last year's figures are, however, adjusted for comparative purposes

British and Irish Railways Stocks and Shares

Stocks	Highest 1933	Lowest 1933	Prices Sept. 26, 1934	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	55½	31	51	+1½
5% Con. Prefce. ...	109¾	69½	112½	—
5% Red. Pref. (1950)	109¼	87½	109½	+1
4% Deb.	108 15/16	99¼	109½	—
4½% Deb.... ...	108	100¾	111½	—
4½% Deb.... ...	116	106	119½	—
5% Deb.	128	117¼	130	—
2½% Deb.... ...	65	60	70½	—
5% Rt. Charge ...	124	111½	128½	—
5% Cons. Guar. ...	122	103	126	—
L.M.S.R.				
Ord.	29⅞	12⅛	22½	+1
4% Prefce. (1923)	51	17	50½	+2
4% Prefce. ...	72	33¼	79	+½
5% Red. Prf. (1955)	93	47¼	99½	—
4% Deb.	103¼	89½	104½	+½
5% Red. Deb. (1952)	114	105	114½	—
4% Guar.	97¼	68⅜	101	+½
L.N.E.R.				
5% Pref. Ord. ...	22½	7¾	16¾	+½
Def. Ord.	10¾	4⅛	8⅛	−¼
4% First Prefce. ...	65½	19⅜	65	+1
4% Second Prefce.	40½	12¼	32	+1½
5% Red. Pref. (1955)	83¾	27	84½	+1½
4% First Guar. ...	94¾	58¼	95½	+1
4% Second Guar.	89¼	48	89½	+½
3% Deb.	77	60¼	77½	+½
4% Deb.	102¾	80	103	+½
5% Red. Deb. (1947)	112	102½	111*	−1½
4½% Sinking Fund Red. Deb.	107½	98¾	108½	—
SOUTHERN				
Pref. Ord.... ...	71	27¾	74	+2
Def. Ord.	24⅜	9⅜	23	+½
5% Prefce. ...	107 11/16	74	112	—
5% Red. Pref. (1964)	107¾	78⅞	111½	—
5% Guar. Prefce.	124¼	102¾	125½	+1
5% Red. Guar. Pref. (1957)	115⅝	103½	115	—
4% Deb.	107½	96¾	109	—
5% Deb.	126½	114¼	129½	—
4% Red. Deb. 1962–67	107¼	100	109½	—
BELFAST & C.D.				
Ord.	6		5	—
FORTH BRIDGE				
4% Deb.	99½	95½	102½	—
4% Guar. ...	98½	94	102½	—
G. NORTHERN (IRELAND)				
Ord.	7½	3½	7	—
G. SOUTHERN (IRELAND)				
Ord.	28	16	14	—
Prefce.	24	12⅛	16½	—
Guar.	42	16¾	46	—
Deb.	60	30⅞	63	—
L.P.T.B.				
4½% "A" ...	117⅞	112	121½	—
5% "A"	127¼	119¼	131½	—
4½% "T.F.A." ...	111¼	106	110½	+½
5% "B"	122½	114	126	—
"C"	86¾	74½	82	+1
MERSEY				
Ord.	16¼	5	11	−1
4% Perp. Deb. ...	83	63⅞	86½	—
3% Perp. Deb. ...	62	51	64½	—
3% Perp. Prefce....	50⅝	27	47½	−1

* ex dividend

CONTRACTS AND TENDERS

The Cement Gun Co. Ltd. has received an order from the Peruvian Corporation for one portable cement gun.

The Monkbridge Iron & Steel Co. Ltd. has received an order for 130 locomotive tyres for the Buenos Ayres Great Southern Railway.

Thos. Firth & John Brown Limited has received an order from the Buenos Ayres Great Southern Railway for 93 locomotive tyres.

The Equipment & Engineering Co. Ltd. has received an order from the Peruvian Corporation for one size C electric tyre heater.

Bayliss, Jones & Bayliss Limited has received an order from the Central Argentine Railway for 150,000 steel fishbolts and nuts for 85 lb. rails.

Alfol Insulation Limited has secured an order for Alfol insulation for the boilers of the fifty 4-8-2 locomotives which the North British Locomotive Co. Ltd. has in hand for the South African Railways and Harbours Administration.

New Indian Contracts

Machine Tools (India) Limited has received an order from the Indian Stores Department for one No. 3 Landis universal grinding machine, complete.

Burn & Co. Ltd. has received an order from the Indian Stores Department for two 65-ft. diam. hand-operated metre-gauge locomotive turntables for the Jodhpur Railway, at a total cost of Rs. 25,050.

The Chief Controller of Stores, Indian Stores Department (Engineering Section), Simla, invites tenders receivable by October 8 for 100 carriage and wagon axles and 300 carriage and wagon tyres, broad gauge.

Hurst Nelson & Co. Ltd. has secured an order for 10 bogie carriage underframes complete with wheels and axles for the Jodhpur Railway, to the inspection of the consulting engineers, Messrs. Rendel, Palmer & Tritton.

Hurst Nelson & Co. Ltd. has also secured an order for nine bogie carriage underframes complete with wheels and axles for the Nizam's State Railway, to the inspection of the consulting engineers, Sir Douglas Fox & Partners.

Hudswell, Clarke & Co. Ltd. has received an order for one 2 ft. 6 in.-gauge mixed-traffic 4-8-0 locomotive and six-wheeled tender for the Bhavnagar State Railway to the inspection of the consulting engineers, Messrs. Robert White & Partners.

Sir W. G. Armstrong, Whitworth & Co. (Engineers) Ltd. has received an order from the Great Indian Peninsula Railway for a white metalling plant comprising a standard preheating and demetalling oven, crude oil fired and a white metalling furnace, oil fired, and pyrometers.

Nasmyth, Wilson & Co. Ltd. has received a repeat order from the Crown Agents for the Colonies for one 0-6-0T shunting locomotive for the Palestine Railways. The earlier order was for two locomotives of this type, and was recorded in this column of our issue for July 13.

The Egyptian State Railways Administration has recently placed orders as follow :—

Tubes Limited : Weldless steel tubes. (Ref. E.S.R. 17.46.)
Compagnie Générale d'Electro-Metallurgie : Copper tubes. (Ref. E.S.R. 17.64.)
Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd. : Buffer rods. (Ref. E.S.R. 21.184.)
The Superheater Co. Ltd. : Superheater elements. (Order No. 17.63.)

Important Chinese Orders

The Chinese Government Purchasing Commission, on behalf of the Ministry of Railways, China, has placed the following orders :—

J. Baker & Bessemer Limited : 80 locomotive tyres and 300 carriage and wagon tyres.
John Spencer & Sons Ltd. : Three locomotive axles and 236 carriage and wagon axles.
Jonas Woodhead & Sons Ltd. : 14 sets of laminated springs for carriages and wagons.
Dart Spring Co. Ltd. : 11,000 helical springs for carriages and wagons.

This equipment is for use on the Canton–Hankow Railway, and is being supplied to the inspection of the consulting engineers, Messrs. Sandberg.

The Chinese Government Purchasing Commission has also placed orders for bridgework as follow :—

Patent Shaft & Axletree Co. Ltd. : Five 45-m. clear spans.
Motherwell Bridge & Engineering Co. Ltd. : Four 18-m. clear spans, two 30-m. clear spans, and 10 18-m. deck plate girder spans.

This bridgework is for the Canton–Hankow Railway, and is to the inspection of the consulting engineers, Messrs. Fox & Mayo.

The Chief Controller of Stores, Indian Stores Department (Engineering Section), Simla, invites tenders receivable by October 1 for 2,000 outside buffer cases.

The South Indian Railway invites tenders receivable by October 9 at 91, Petty France, Westminster S.W.1, for the supply of pressed-steel sleepers for B.S. 90 R.F.B. rails.

The Agent, Eastern Bengal Railway, invites tenders, receivable by October 3, for one motor-driven 80-in. single-purpose, heavy-duty wheel lathe for broad-gauge wheels up to 80 in. diam. ; one motor-driven axle journal grinding machine for locomotive and tender axle journals ; and one grinding and buffing machine for engine motion details.

The Agent, East Indian Railway, 105, Clive Street, Calcutta, invites tenders, receivable by October 5, for 2,000,000 liners for D and O. gibs and 400,000 standard reversible gibs. Tenders are also invited, receivable by October 10, for X-ray plant, and by October 11 for an electrically-driven turret lathe.

Forthcoming Events

Oct. 2 (*Tues.*).—Retired Railway Officers' Society, in Room 300, Great Eastern Hotel, Liverpool Street, London, E.C.2, 2.30 p.m. Ordinary Meeting.

Industrial Transport Assoc., at British Iron and Steel Federation, Caxton House (East), Tothill Street, London, S.W.1, 6.30 p.m. "New Problems for the Industrial Transport Manager," by Mr. W. Oldham.

Oct. 8 (*Mon.*).—Institute of Transport (London), at Inst. of Electrical Engineers, Savoy place, W.C.2, 5.30 p.m. Presidential Address by Mr. Sidney E. Garcke.

Oct. 8 & 9 (*Mon. and Tues.*)—L.M.S.R. (London) Amateur Dramatic Society, at the Cripplegate Institute Theatre, Golden Lane, E.C. at 8 p.m. "The Farmer's Wife," by Eden Phillpotts.

Oct. 10 (*Wed.*).—Institution of Railway Signal Engineers, at Inst. of Electrical Engineers, Savoy Place, London, W.C.2, 6 p.m. "The Distant Signal Problem," by Mr. T. S. Lascelles.

Permanent Way Institution (London). "Problems of Permanent Way Maintenance on Electrified Track," by Mr. J. E. Taylor, Waterloo Station, 7 p.m.

Permanent Way Institution (Manchester-Liverpool), at Temperance Inst., Southport, 3 p.m. "Renewal of Steel Underbridges," by Mr. A. Curry.

Oct. 11 (*Thurs.*).—Institution of Locomotive Engineers (London), at Inst. of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m. Informal Meeting.

Southern Railway (London) Lecture and Debating Society, at Chapter House, St. Thomas' Street, London Bridge, S.E.1, 5.45 p.m. "The Kenya and Uganda Railways," by Mr. A. B. Cameron.

Oct. 12 (*Fri.*)—Railway Club, 57, Fetter Lane, London, E.C.4. "Punch's Railway (The West London Railway)," by D. V. Levien.

Oct. 15 (*Mon.*).—Institution of Welding Engineers, at Middlesbrough. "End to End Welding of Rails," by Mr. A. C. Croskell.

Oct. 16 (*Tues.*).—Institute of Transport (London), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. "Practical and Economic Considerations in the Study of Transport," by Mr. D. R. Lamb.

Industrial Transport Assoc., at British Iron and Steel Federation, Caxton House (East), Tothill Street, London, S.W.1, 6.30 p.m. "Aerial Ropeways," by Mr. R. H. Pearson.

Oct. 18 (*Thurs.*).—G.W.R. (London) Lecture and Debating Society, in General Meeting Room, Paddington Station, 5.45 p.m. "Railway Publicity," by Mr. G. E. Orton.

Oct. 23 (*Tues.*).—Institute of Transport (Metropolitan Graduate), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. Inaugural Meeting and Presidential Address by Mr. Sidney E. Garcke.

Oct. 25 (*Thurs.*).—Institution of Locomotive Engineers (London), at Inst. of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m. "The Manufacture of Boiler Tubes," by Mr. G. H. H. Collins.

Oct. 26 (*Fri.*).—Junior Institution of Engineers, 39, Victoria Street, London, S.W.1, 7.30 p.m. "Locomotive Running Shed Economy," by Mr. E. J. H. South.

NORTH EAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS.—This institution will celebrate its jubilee during the 1934-35 session, which opens on October 19. A film lent by the courtesy of Cunard White Star Limited showing the launch of the *Queen Mary* will be exhibited at the opening meeting.

OFFICIAL NOTICES

South Indian Railway Company Limited

THE Directors are prepared to receive Tenders for the supply of:—

PRESSED STEEL SLEEPERS FOR B.S. 90 "R" F.B. RAILS.

Specifications and Forms of Tender will be available at the Company's Offices, 91, Petty France, Westminster, S.W.1.

Tenders, addressed to the Chairman and Directors of the South Indian Railway Co. Ltd., marked "Tender for Pressed Steel Sleepers," with the name of the firm tendering, must be left with the undersigned not later than 12 noon on Tuesday, the 9th October, 1934.

The Directors do not bind themselves to accept the lowest or any Tender.

A charge, which will not be returned, will be made of 10s. for each copy of the Specification.

Copies of the drawings may be obtained at the Offices of the Company's Consulting Engineers, Messrs. Robert White & Partners, 3, Victoria Street, S.W.1.

A. MUIRHEAD,
Managing Director.

91, Petty France,
Westminster, S.W.1.
21st September, 1934.

The Institute of Transport Examinations, 1935

NOTICE IS HEREBY GIVEN that the Graduateship and Associate Membership Examinations will be held in London and other centres on Thursday, Friday and Saturday, April 25th, 26th and 27th, 1935.

The latest date for the deposit of forms of entry, which can be obtained after October 1st, 1934, is March 1st, 1935 (January 1st if any exemptions are claimed). Full particulars, previous question papers (price 1s. per set, post free) and copies of a recently issued booklet entitled "The Institute of Transport Examinations: notes for the guidance of candidates unable to attend preparatory courses" (price 2s. 6d. post free) may be obtained from the undersigned.

By Order of the Council,

A. WINTER GRAY,
Secretary.

15, Savoy Street,
London, W.C.2.
August 27th, 1934.

Bengal-Nagpur Railway Company Limited

THE Directors are prepared to receive Tenders for:—

454 STEEL ENGINE TYRES.

Specification and Form of Tender can be obtained at the Company's Offices, 132, Gresham House, Old Broad Street, London, E.C.2, on or after Thursday, 27th September, 1934.

A fee of 10s. will be charged for each copy of the Specification, which is not returnable.

Tenders must be submitted not later than noon on Tuesday, 9th October, 1934. The Directors do not bind themselves to accept the lowest or any Tender, and reserve to themselves the right of reducing or dividing the order.

By Order of the Board,
R. GRANT,
Secretary.

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

RAILWAY AND OTHER MEETINGS

Ottoman Railway from Smyrna to Aidin

At the half-yearly meeting of the Ottoman Railway from Smyrna to Aidin, held on September 25, at Winchester House, Old Broad Street, E.C., the Viscount St. Davids (Chairman) said that the results before him were at any rate better than those for the record-bad period from January to June, 1933. Although the exchange had improved, however, the control thereof was more rigorous than before, so that virtually no money had been remitted from Turkey. In mitigation of this, the company had lately gained permission to export wheat and was hoping to provide remittances by that method. There had been some improvement in Turkish barley and in the price of wheat. Passenger traffic had decreased by 11 per cent.

The company had had no success in its claim on Greece in spite of the award of the Anglo-Hellenic Arbitral Tribunal. The Greek Government continually placed technical objections in the way of paying its debts.

A difficulty of working the railway in Turkey at the present time arose from the strong nationalist feeling in the country which manifested itself as a dislike of seeing a foreign company doing too well. The Chairman wished that the Turks would study the benefits reaped by the Argentine Republic from the operation of British-owned railways within its borders. The shareholders in these companies were the most active exponents of Argentine interests in London, with consequent benefit to the trade and credit of the country. He was convinced that satisfactory results for the shareholders of this company would result in the Turkish case being presented here far more effectively than could come about in any other way.

Suggested Government Purchase

At the end of the meeting, a debenture-holder inquired as to the foundation of reports appearing in financial papers and elsewhere of the Turkish Government's intention of suppressing all foreign enterprises in the country.*

Replying, the Chairman said: "We have seen the notices in the newspapers, but we have had no communications from Turkey in that sense at all. We know nothing more of the matter than has appeared in the press."

* A Reuters message forecasting a move by the Turkish Government to purchase the Izmir-Aidin Railway was summarised on page 207 of THE RAILWAY GAZETTE of August 3.

RAILWAY AND OTHER REPORTS

Central Uruguay Railway.—Under the scheme of arrangement passed on September 29, 1933, only one-half of the interest on the 4 per cent. "Western Extension" debentures of the Central Uruguay Railway Company of Monte Video is payable during the period of the moratorium against surrender of the coupons. Consequently £1, less income-tax, for Coupon No. 69, being half the interest due on October 1, 1934, will be paid on and after that date.

Cordoba Central Railway.—Under the scheme of arrangement sanctioned by the Court on July 25, 1932, power is given to the company to postpone, with the concurrence of the trustees for the first debenture stockholders, payment of the half-yearly instalments of interest on its first debenture stock falling due on October 1, 1934, April 1, 1935, October 1, 1935, and April 1, 1936, if the net revenue of the company does not permit of payment being made on the due dates. Although the net revenue position as at June 30, 1934, will show some improvement as compared with that at June 30, 1933, the directors regret that it will not be possible for the company to meet the instalment of interest payable on the first debenture stock on October 1, next. The board has therefore decided, with the concurrence of the trustees, to postpone payment of such instalment of interest for a period of 6 months, or until such later date as may, with the concurrence of the trustees, hereafter be determined.

Stewarts and Lloyds Limited.—Dividends at the rate of 6 per cent. per annum on the first preference, at the rate of 10 per cent. per annum on the second preference, and at the rate of 5 per cent. per annum on the third preference shares will be paid on October 31.

Edgar Allen & Co. Ltd.—The directors state that although trade conditions have improved considerably, they feel it is necessary to conserve resources. Payment of dividend on the 5 per cent. cumulative preference shares in respect of the half year to September 30 is therefore deferred.

Vulcan Foundry Limited.—A dividend on the ordinary shares of 2 per cent (tax free) for the year to June 30, 1934, is recommended, warrants to be posted on October 15. This distribution is being made from profit on sale of investments, and it is explained that, in consequence, it is not taxable.

Railway Share Market

The stock and share markets have opened the post-holiday season with great activity. The predominant influence in the Home Railway market has been the labour troubles in the South Wales coalfields. The news of the mediation of the Mines Department caused hopes of a peaceful settlement of the dispute. There has been considerable buying of Great Western ordinary stock and the general traffic outlook being favourable there was a disposition to buy the preference stocks of the other companies.

London Midland & Scottish 1923 preference stock had a sharp rise on the market proving short of stock. Southern preferred and deferred ordinary stocks were again favoured on account of the aggregate increase to date in gross traffic receipts and the prospects attaching to the additional electrification proceeding on the company's system. The first and second guaranteed stocks of the London & North Eastern were also in demand at higher prices. London Transport "C" stock moved up in response to encouraging dividend estimates. With only a quarter of the year to go there is a tendency to estimate the probable dividend rates on some of the junior preference stocks. It is estimated that the Southern will be able to earn 3¾ per cent. on the preferred stock, which would be likely to increase to the full rate in the event of results of electrification in the Sevenoaks area fulfilling expectations of increased traffic. Some thousands of additional houses are being erected adjoining the Southern system in this area, which is becoming one of the most populous of the outer suburbs, and it is anticipated that this increased population will be reflected in the company's takings over the next twelve months. In other directions some speculative attention was being given to the L.M.S. ordinary stock, but the interest of the investor is so far mainly in the preference stocks. Among foreign railway stocks there was a reaction in Argentine railway stocks following the news of the labour trouble, but a steadier tendency developed later when it became known that both sides had agreed to arbitration by the Government.

The reports of the companies are due very shortly, and it is hoped that with a settlement of the trouble and some improvement in exchange conditions the directors will be able to report more favourably on the outlook. Brazilian stocks have been slightly harder, Leopoldina ordinary being purchased on prospects of business recovery in Brazil. Antofagasta stock was firm preceding the official intimation that results to date show improvement, but that exchange restrictions prevent immediate payment of preference dividend arrears.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1933–34	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1933	No. of Week	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1933	Prices: Lowest 1933	Prices: Sept. 26, 1934	Prices: Yield % (See Note)
				£	£		£	£	£					
South & Central America.	Antofagasta (Chili) & Bolivia	830	23.9.34	11,720	+ 1,120	38	535,220	399,530	+ 135,680	Ord. Stk.	26	11¾	25	Nil
	Argentine North Eastern..	753	22.9.34	7,283	— 1,272	12	94,473	126,582	— 32,109	,,	14½	5	9½	Nil
	Argentine Transandine ..	111	—	—	—	—	—	—	—	A. Deb.	55	40	50	§
	Bolivar	170	Aug., 1934	5,300	+ 900	34	49,150	51,650	— 2,500	6 p.c. Db.	10	5	10	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	15	11	13	3¹⁵/₁₆
	Buenos Ayres & Pacific ..	2,806	22.9.34	66,764	— 25,436	12	838,465	996,123	— 157,658	Ord. Stk.	26	9⁷/₁₆	13	Nil
	Buenos Ayres Central ..	190	2.9.34	$146,200	+ $7,400	9	$1,203,800	$1,184,400	+ $19,400	Mt. Db.	30	10	23	Nil
	Buenos Ayres Gt. Southern	5,085	22.9.34	118,834	— 22,217	12	1,473,914	1,845,199	— 371,285	Ord. Stk.	44½	21½	30	Nil
	Buenos Ayres Western ..	1,926	22.9.34	34,985	— 17,642	12	498,522	620,580	— 122,058	,,	34½	15¾	24	Nil
	Central Argentine ..	3,700	22.9.34	105,487	— 16,721	12	1,519,446	1,642,102	— 122,656	,,	28½	15	19	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	18	10	10	Nil
	Cent. Uruguay of M. Video	273	22.9.34	15,149	+ 2,394	12	167,217	166,565	+ 652	Ord. Stk.	20	8	12½	Nil
	Do. Eastern Extn.	311	22.9.34	4,016	+ 1,483	12	35,023	29,772	+ 5,251	—	—	—	—	—
	Do. Northern Extn.	185	22.9.34	1,458	+ 229	12	19,065	18,520	+ 545	—	—	—	—	—
	Do. Western Extn.	211	22.9.34	1,591	+ 248	12	14,974	15,416	— 442	—	—	—	—	—
	Cordoba Central	1,218	22.9.34	25,360	— 12,240	12	394,320	509,530	— 115,210	Ord. Inc.	9¼	2½	5	Nil
	Costa Rica	188	July, 1934	18,181	— 2,523	4	18,181	20,704	— 2,523	Stk.	29	20	27½	7¼
	Dorada	70	Aug., 1934	11,300	+ 2,800	34	80,500	61,600	+ 18,900	1 Mt. Db.	76½	68¾	105	5¹¹/₁₆
	Entre Rios	810	22.9.34	11,020	— 925	12	131,235	166,364	— 35,129	Ord. Stk.	26½	9	16	Nil
	Great Western of Brazil ..	1,082	22.9.34	10,000	+ 2,000	38	287,600	358,600	— 71,000	Ord. Sh.	23/6	1/2	7/8	Nil
	International of Cl. Amer.	794	July, 1934	$302,803	— $28,462	30	$3,022,796	$2,990,146	+ $32,650	—	—	—	—	—
	Interoceanic of Mexico ..	—	—	—	—	—	—	—	—	1st Pref.	1/2	1/16	1/2	Nil
	La Guaira & Caracas ..	22¾	Aug., 1934	3,930	+ 430	34	29,820	42,770	— 12,950	Stk.	16	10	8½	Nil
	Leopoldina	1,918	22.9.34	30,183	+ 543	38	957,960	938,751	+ 19,209	Ord. Stk.	20¼	10	11½	Nil
	Mexican	483	21.9.34	$185,800	+ $34,800	12	$2,610,000	$2,138,200	+ $471,800	,,	3	1/2	3	Nil
	Midland of Uruguay ..	319	Aug., 1934	8,088	— 697	9	17,549	17,530	+ 19	Ord. Stk.	2	1	1½	Nil
	Nitrate	401	15.9.34	7,727	— 1,490	37	182,510	88,840	+ 93,670	Ord. Sh.	78/6	11/16	3/8	Nil
	Paraguay Central ..	274	15.9.34	4,470	+ 1,470	11	50,320	42,260	+ 8,060	Pr. Li. Stk.	72	49½	70	8½
	Peruvian Corporation ..	1,059	Aug., 1934	70,048	+ 14,087	8	122,665	107,206	+ 15,459	Pref.	15¼	5	11	Nil
	Salvador	100	15.9.34	¢7,406	— ¢2,176	11	¢106,977	¢153,410	— ¢46,433	Pr. Li. Db.	70	66½	70	7¹⁄₈
	San Paulo	1531/2	16.9.34	29,889	— 7,771	37	1,117,125	1,118,148	— 1,023	Ord. Stk.	102	68	82	4⅞
	Taltal	164	Aug., 1934	6,435	+ 2,720	8	13,475	7,035	+ 6,440	Ord. Sh.	1¾	3/4	1¾	5¹¹/₁₆
	United of Havana.. ..	1,365	22.9.34	13,996	— 512	12	205,365	155,956	+ 49,409	Ord. Stk.	8	2	4½	Nil
	Uruguay Northern ..	73	Aug., 1934	1,015	— 65	9	2,071	2,146	— 75	Deb. Stk.	6	3½	6½	Nil
Canada.	Canadian National ..	23,736	21.9.34	736,962	+ 87,653	37	•23,497,942	20,757,090	+2,740,852	—	—	—	—	—
	Canadian Northern ..	—	—	—	—	—	—	—	—4 p.c.	Perp. Dbs.	60½	38	75½	5⁵/₁₆
	Grand Trunk	—	—	—	—	—	—	—	— 4 p.c. Gar.		99¾	85	102	3¹⁵/₁₆
	Canadian Pacific	17,018	21.9.34	583,600	+ 35,800	37	17,493,800	15,675,800	+1,818,000	Ord. Stk.	22⅛	11	14	Nil
India.†	Assam Bengal	1,311	18.8.34	24,495	+ 3,565	20	535,734	435,434	+ 100,300	Ord. Stk.	79	70	82½	3¹¹/₁₆
	Barsi Light..	202	1.9.34	2,100	+ 382	22	67,087	66,015	+ 1,072	Ord. Sh.	10¹³/₄	70	97½	6¼
	Bengal & North Western..	2,112	1.9.34	25,400*	— 14,706	22	1,083,495	1,075,723	+ 7,772	Ord. Stk.	292	240	282½	5¹³/₁₆
	Bengal Dooars & Extension	161	1.9.34	3,017	+ 126	22	59,870	59,982	— 112	,,	127	119	126	5⅜
	Bengal-Nagpur	3,269	25.8.34	97,350	+ 11,066	21	2,370,073	2,129,722	+ 240,351	,,	97¼	83½	103½	3¼
	Bombay, Baroda & Cl. India	3,072	15.9.34	125,475	— 750	24	2,557,475	3,417,225	+ 140,250	,,	112	107	110½	5⁷/₁₆
	Madras & South'n Mahratta	3,230	1.9.34	109,275	+ 15,213	22	2,547,632	2,500,844	+ 46,788	,,	127	114¼	128½	7
	Rohilkund & Kumaon ..	546	1.9.34	6,125	— 215	22	207,644	203,947	+ 3,697	,,	260	225	251½	5¹⁵/₁₆
	South India	2,526	25.8.34	80,445	+ 9,086	21	1,713,943	1,644,187	+ 69,755	,,	119½	112	116½	6⅞
Various.	Beira-Umtali	204	July, 1934	62,234	+ 17,455	43	519,179	411,279	+ 107,900	—	—	—	—	—
	Bilbao River & Cantabrian	15	Aug., 1934	1,358	— 426	34	14,340	12,190	+ 2,150	—	—	—	—	—
	Egyptian Delta	621	10.9.34	6,952	+ 1,590	23	90,862	83,526	+ 7,336	Prf. Sh.	1³¹/₃₂	1¾	2⅝	4¼
	Great Southern of Spain ..	104	15.9.34	2,863	+ 591	37	78,235	78,682	— 447	Inc. Deb.	4	3	3½	Nil
	Kenya & Uganda	1,625	Mar., 1934	240,520	+ 21,064	12	638,137	606,192	+ 31,945	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	53	33½	44½	7⅞
	Mashonaland	913	July, 1934	116,483	+ 42,625	43	956,615	650,063	+ 306,552	1 Mg. Db.	91¾	42	94	8⁵/₁₆
	Midland of W. Australia ..	277	July, 1934	11,897	— 42	4	11,897	11,939	— 42	Inc. Deb.	89	70	97½	4¼
	Nigerian	1,905	4.8.34	29,137	+ 12,877	18	458,506	398,973	+ 59,533	—	—	—	—	—
	Rhodesia	1,538	July, 1934	192,507	+ 58,885*	43	1,612,748	1,187,812	+ 424,936	4 p.c. Db.	98½	80¾	102	3¹⁵/₁₆
	South African	13,182	1.9.34	530,407	+ 74,226	22	10,872,100	9,612,302	+1,259,798	—	—	—	—	—
	Victorian	6,172	May, 1934	755,392	+ 15,381	48	8,479,194	8,811,604	— 332,410	—	—	—	—	—
	Zafra & Huelva	112	July, 1934	11,060	+ 55	30	76,861	73,331	+ 3,530	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

* Traffic dislocated by floods. † Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rate of exchange and not on the par value